Jenkins, Ray (DEQ)

From: Jenkins, Ray (DEQ)
Sent: Wednesday, May 16, 2012 4:04 PM
To: 'Ellinghaus, Matthew B.'
Subject: RE: TWWTP Application Updates

Thanks Matt. This information completes the permit renewal application.

One question about the temperature data you sent. What does the following column heading mean:

Plnt If
Temp Water C
Degrees C
Daily

From: Ellinghaus, Matthew B. [mailto:mbellinghaus@hanovercounty.gov]
Sent: Wednesday, May 16, 2012 1:21 PM
To: Jenkins, Ray (DEQ)
Subject: TWWTP Application Updates

Ray –

Attached is a pdf with all the updated pages as we discussed, along with the additional NH3 data sheets and the public notice authorization. Also the accompanying excel is a data dump for temperature covering a larger timeframe that originally included in the original submission.

If you have any questions or need the originals, please let me know.

Thanks,

Matt

Matthew Ellinghaus
Assistant Chief of Operations & Maintenance
Hanover County Public Utilities
(804) 365-6701 (office)
(804) 365-6705 (fax)

VPDES Permit Application Addendum

1. Entity to whom the permit is to be issued: Hanover County

Who will be legally responsible for the wastewater treatment facilities and compliance with the permit? This may or may not be the facility or property owner.

2. Is this facility located within city or town boundaries? Y / (N)

3. What is the tax map parcel number for the land where this facility is located? 8726-62-7679

4. For the facility to be covered by this permit, how many acres will be disturbed during the next five years due to new construction activities? None

5. ALL FACILITIES: What is the design average flow of this facility? 7.0 MGD
Industrial facilities: What is the max. 30-day avg. production level (include units)? _____

In addition to the above design flow or production level, should the permit be written with limits for any other discharge flow tiers or production levels? (Y)/ N

If AYes≅, please specify the other flow tiers (in MGD) or production levels:
10.0

Please consider: Is your facility=s design flow considerably greater than your current flow? Do you plan to expand operations during the next five years?

6. Nature of operations generating wastewater:
Municipal wastewater treatment

99.4 % of flow from domestic connections/sources
Number of private residences to be served by the wastewater treatment facilities: __ 0 __ 1-49 X 50 or more

0.6 % of flow from non-domestic connections/sources

7. Mode of discharge: X Continuous __ Intermittent __ Seasonal
Describe frequency and duration of intermittent or seasonal discharges:

8. Identify the characteristics of the receiving stream at the point just above the facility=s discharge point:
__ Permanent stream, never dry
__ Intermittent stream, usually flowing, sometimes dry
__ Ephemeral stream, wet-weather flow, often dry
__ Effluent-dependent stream, usually or always dry
__ Lake or pond at or below the discharge point
X Other: Tidal River

9. Approval Date(s):
O & M Manual September 2010 Sludge/Solids Management Plan September 2004

Have there been any changes in your operations or procedures since the above approval dates? Y (N)

FACILITY NAME AND PERMIT NUMBER:
Totopotomoy Wastewater Treatment Plant - VA0089915

Form Approved 1/14/99
OMB Number 2040-0086

A.11. Description of Treatment.

a. What levels of treatment are provided? Check all that apply.

_____ Primary ✓ Secondary

✓ Advanced _____ Other. Describe: Biological Nutrient Removal

b. Indicate the following removal rates (as applicable):

Design BOD_5 removal or Design $CBOD_5$ removal	99 (actual)	%
Design SS removal	99 (actual)	%
Design P removal	99 (actual)	%
Design N removal	96 (actual)	%
Other _____	_____	%

c. What type of disinfection is used for the effluent from this outfall? If disinfection varies by season, please describe.

Ultra-violet light disinfection

If disinfection is by chlorination, is dechlorination used for this outfall? _____ Yes _____ No

d. Does the treatment plant have post aeration? ✓ Yes _____ No

A.12. Effluent Testing Information. All Applicants that discharge to waters of the US must provide effluent testing data for the following parameters. Provide the indicated effluent testing required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three samples and must be no more than four and one-half years apart.

Outfall number: 001

PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE		
	Value	Units	Value	Units	Number of Samples
pH (Minimum)	6.84	s.u.			
pH (Maximum)	7.38	s.u.			
Flow Rate	4.98	MGD	2.43	MGD	365
Temperature (Winter)	20.3	C	16.3	C	90
Temperature (Summer)	25.3	C	23	C	90

* For pH please report a minimum and a maximum daily value

POLLUTANT		MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML / MDL
		Conc.	Units	Conc.	Units	Number of Samples		
CONVENTIONAL AND NONCONVENTIONAL COMPOUNDS.								
BIOCHEMICAL OXYGEN DEMAND (Report one)	BOD-5							
	CBOD-5	3.2	MG/L	3.2	MG/L	365	S.M 5210B	2.0 mg/l
~~FECAL COLIFORM~~ - (E. coli)		199	N/CML	8.8	MG/L	365	S.M 9223D	1.0 cfu/100ml
TOTAL SUSPENDED SOLIDS (TSS)		6.6	MG/L	3.2	MG/L	52	S.M 2540D,A	1.0 mg/l

END OF PART A.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

c If the answer to B.5.b is "Yes," briefly describe, including new maximum daily inflow rate (if applicable).

_____

d. Provide dates imposed by any compliance schedule or any actual dates of completion for the implementation steps listed below, as applicable. For improvements planned independently of local, State, or Federal agencies, indicate planned or actual completion dates, as applicable. Indicate dates as accurately as possible.

Implementation Stage	Schedule MM / DD / YYYY	Actual Completion MM / DD / YYYY
– Begin construction	___/___/_____	___/___/_____
– End construction	___/___/_____	___/___/_____
– Begin discharge	___/___/_____	___/___/_____
– Attain operational level	___/___/_____	___/___/_____

e. Have appropriate permits/clearances concerning other Federal/State requirements been obtained? ____Yes ____No

Describe briefly: _____

_____

B.6. EFFLUENT TESTING DATA (GREATER THAN 0.1 MGD ONLY).

Applicants that discharge to waters of the US must provide effluent testing data for the following parameters. Provide the indicated effluent testing required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three pollutant scans and must be no more than four and one-half years old.

Outfall Number: 001

POLLUTANT	MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML / MDL
	Conc.	Units	Conc.	Units	Number of Samples		
CONVENTIONAL AND NONCONVENTIONAL COMPOUNDS.							
AMMONIA (as N)	<0.20	mg/l	<0.20	mg/l	3	EPA 350.1	0.20 mg/l
CHLORINE (TOTAL RESIDUAL, TRC)	<0.1	mg/l	<0.1	mg/l	3	Hach 8167	0.1 mg/l
DISSOLVED OXYGEN	13.36	mg/l	8.9	mg/l	1095	S.M 4500-O G	0.1 mg/l
TOTAL KJELDAHL NITROGEN (TKN)	6.8	mg/l	1.5	mg/l	1095	S.M 4500NH3F	0.050 mg/l
NITRATE PLUS NITRITE NITROGEN	7.3	mg/l	6.26	mg/l	156	EPA 351.2	0.05 mg/l
OIL and GREASE	<5.0	mg/l	<5.0	mg/l	3	EPA 1664A	5.0 mg/l
PHOSPHORUS (Total)	1.6	mg/l	0.3	mg/l	156	SM 4500-P B.5	0.1 mg/l
TOTAL DISSOLVED SOLIDS (TDS)	436	mg/l	391	mg/l	3	SM2540C	1.0 mg/l
OTHER							

END OF PART B.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

SUPPLEMENTAL APPLICATION INFORMATION

PART F. INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES

All treatment works receiving discharges from significant industrial users or which receive RCRA, CERCLA, or other remedial wastes must complete Part F.

GENERAL INFORMATION:

F.1. **Pretreatment Program.** Does the treatment works have, or is it subject to, an approved pretreatment program?

✓ Yes ___ No

F.2. **Number of Significant Industrial Users (SIUs) and Categorical Industrial Users (CIUs).** Provide the number of each of the following types of industrial users that discharge to the treatment works.

a. Number of non-categorical SIUs. 0

b. Number of CIUs. 1

SIGNIFICANT INDUSTRIAL USER INFORMATION:

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, copy questions F.3 through F.8 and provide the information requested for each SIU.

F.3. **Significant Industrial User Information.** Provide the name and address of each SIU discharging to the treatment works. Submit additional pages as necessary.

Name: Hanover Manufacturing Plant

Mailing Address: 10117 Leadbetter Place, Ashland, VA 23005-3257

F.4. **Industrial Processes.** Describe all of the industrial processes that affect or contribute to the SIU's discharge.

Manufacturing of extruded aluminum products, aluminum forming and plastic processing.

F.5. **Principal Product(s) and Raw Material(s).** Describe all of the principal processes and raw materials that affect or contribute to the SIU's discharge.

Principal product(s): Extruded aluminum wire (coated and uncoated).

Raw material(s): Aluminum wire stock, polymer beads

F.6. **Flow Rate.**

a. Process wastewater flow rate. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

15,000 gpd (✓ continuous or ___ intermittent)

b. Non-process wastewater flow rate. Indicate the average daily volume of non-process wastewater flow discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

1,700 gpd (___ continuous or ✓ intermittent)

F.7. **Pretreatment Standards.** Indicate whether the SIU is subject to the following:

a. Local limits ___ Yes ✓ No

b. Categorical pretreatment standards ✓ Yes ___ No

If subject to categorical pretreatment standards, which category and subcategory?

40 CFR Part 467, subpart C (Aluminum Forming - Extrusion)

F.8. Problems at the Treatment Works Attributed to Waste Discharged by the SIU. Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years?

____Yes ✓ No If yes, describe each episode.

RCRA HAZARDOUS WASTE RECEIVED BY TRUCK, RAIL, OR DEDICATED PIPELINE:

F.9. RCRA Waste. Does the treatment works receive or has it in the past three years received RCRA hazardous waste by truck, rail, or dedicated pipe? ____Yes ___No (go to F.12.)

F.10. Waste Transport. Method by which RCRA waste is received (check all that apply):

_____Truck _____Rail _____Dedicated Pipe

F.11. Waste Description. Give EPA hazardous waste number and amount (volume or mass, specify units).

EPA Hazardous Waste Number	Amount	Units

CERCLA (SUPERFUND) WASTEWATER, RCRA REMEDIATION/CORRECTIVE ACTION WASTEWATER, AND OTHER REMEDIAL ACTIVITY WASTEWATER:

F.12. Remediation Waste. Does the treatment works currently (or has it been notified that it will) receive waste from remedial activities?

____Yes (complete F.13 through F.15.) ____No

Provide a list of sites and the requested information (F.13 - F.15.) for each current and future site.

F.13. Waste Origin. Describe the site and type of facility at which the CERCLA/RCRA/or other remedial waste originates (or is expected to originate in the next five years).

F.14. Pollutants. List the hazardous constituents that are received (or are expected to be received). Include data on volume and concentration, if known. (Attach additional sheets if necessary).

F.15. Waste Treatment.

a. Is this waste treated (or will it be treated) prior to entering the treatment works?

____Yes ____No

If yes, describe the treatment (provide information about the removal efficiency):

b. Is the discharge (or will the discharge be) continuous or intermittent?

____Continuous ____Intermittent If intermittent, describe discharge schedule.

END OF PART F.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

REPORT OF ANALYSIS

CLIENT: Hanover County
ATTN: David Madumadu
ADDRESS: 9015 Pole Green Park Lane
Mechanicsville, VA 23116
PHONE: 804-365-6720
FAX: 804-365-6725

Special Notes:
RE: Totopotomoy WWTP

SAMPLE COLLECTED BY: CLIENT
GRAB COLLECTION:
Date: Time:
COMPOSITE COLLECTION:
Start Date: 04/02/12 Time: 0800
End Date: 04/03/12 Time: 0800
PICK UP BY: REED - LL
SAMPLE RECEIPT:
Date: 4/3/12 Time: 1440
NUMBER OF CONTAINERS: 1
SAMPLE CONDITION: ☑ Good ☐ Other (See C-O-C)
REPORT NO: 12-05026 8:14

SAMPLE ID: 2012-598 FE
SAMPLE NO: 12-05026

Parameter	Method Number	JRA QL	Result	Unit	Analyst	Date	Time
Total Phosphorus	365.1	0.10	0.19	mg/L	EFA	4/4/12	1335
Total Nitrogen	351.2/353.2	0.5	7.4	mg/L	EFA	4/9/12	1137
Total Kjeldahl Nitrogen	351.2	0.50	1.96	mg/L	LEF	4/6/12	1204
Nitrate/Nitrite	353.2	0.05	5.47	mg/L	EFA	4/6/12	1352
Ammonia	*4500NH3D	0.10	< 0.10	mg/L	ARC	4/9/12	0815

NOTES:

JRA Quantification Level is the concentration of the lowest calibration standard above zero with a reliable signal.

The results on this report relate only to the sample(s) provided for analysis.

Results conform to NELAC standards, where applicable, unless otherwise indicated.

*SM 20 Ed.

Authorized By: Elaine Claiborne

Elaine Claiborne, Laboratory Director

Date: 10-Apr-12

James R. Reed & Associates
770 Pilot House Drive, Newport News, VA 23606
(757) 873-4703 • Fax: (757) 873-1498

VELAP# 460013
EPA# VA00015

REPORT OF ANALYSIS

CLIENT: Hanover County
ATTN: David Madumadu
ADDRESS: 9015 Pole Green Park Lane
Mechanicsville, VA 23116
PHONE: 804-365-6720
FAX: 804-365-6725

Special Notes:
RE: Totopotomoy WWTP

SAMPLE COLLECTED BY: CLIENT
GRAB COLLECTION:
Date: Time:
COMPOSITE COLLECTION:
Start Date: 04/09/12 Time: 0800
End Date: 04/10/12 Time: 0800
PICK UP BY: REED - LL
SAMPLE RECEIPT:
Date: 4/10/12 Time: 1425
NUMBER OF CONTAINERS: 1
SAMPLE CONDITION: ☑ Good ☐ Other (See C-O-C)
REPORT NO: 12-05437 7:49

SAMPLE ID: 2012-647 FE
SAMPLE NO: 12-05437

Parameter	Method Number	JRA QL	Result	Unit	Analyst	Date	Time
Total Phosphorus	365.1	0.10	0.20	mg/L	EFA	4/12/12	1441
Total Nitrogen	351.2/353.2	0.5	5.5	mg/L	LEF	4/19/12	0838
Total Kjeldahl Nitrogen	351.2	0.50	1.47	mg/L	LEF	4/18/12	1306
Nitrate/Nitrite	353.2	0.05	4.06	mg/L	EFA	4/13/12	1411
Ammonia	*4500NH3D	0.10	< 0.10	mg/L	ARC	4/13/12	0815

NOTES:

JRA Quantification Level is the concentration of the lowest calibration standard above zero with a reliable signal.

The results on this report relate only to the sample(s) provided for analysis.

Results conform to NELAC standards, where applicable, unless otherwise indicated.

*SM 20 Ed.

Authorized By: Elaine Claiborne

Elaine Claiborne, Laboratory Director

Date: 20-Apr-12

James R. Reed & Associates
770 Pilot House Drive, Newport News, VA 23606
(757) 873-4703 ● Fax: (757) 873-1498

VELAP# 460013
EPA# VA00015

AUTHORIZATION TO BILL APPLICANT FOR
A PUBLIC NOTICE

I hereby authorize the Department of Environmental Quality to have the cost of publishing a public notice once a week for two consecutive weeks, seven days apart, in The Richmond Times-Dispatch, charged to:

Agent or Department to be billed: Hanover County Department of Public Utilities

ATTN: Dave Van Gelder

Agent's telephone number: 804-365-6235

Agent's address: P.O. Box 470

Hanover, VA 23069

Authorizing Agent:

Signature

VPDES Permit Number VA0089915 – Totopotomoy Wastewater Treatment Plant
Attention: Ray Jenkins

Jenkins, Ray (DEQ)

From: Jenkins, Ray (DEQ)
Sent: Tuesday, April 03, 2012 3:52 PM
To: Ellinghaus, Matthew B.
Subject: Totopotomoy WWTP -- Permit Renewal Application

Matt, I've reviewed the permit renewal application for the Totopotomoy WWTP.

To follow-up on our telephone conversation today, the following revisions are to be made:

1. On page 6 of Form 2A the MDL for $cBOD_5$ will be changed to 2 mg/L.

   Also on page 6, I understand that the fecal data that are presented are actually *E. coli* data. That will be noted on the form or just noted in your response.

2. On page 8 of Form 2A, two more ammonia samples are needed.

3. Part F (page 18) of Form 2A will be completed.

4. Question #6 in the VPDES Permit Addendum Application will be adjusted to reflect the industrial contribution from the Hanover Manufacturing facility.

5. Please complete and return the public notice authorization form. The application will not be considered complete until this form is submitted.

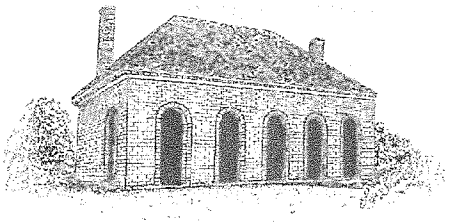
I forgot to request that you send me the individual data points on effluent temperature. I will use these data in my effluent limitation evaluation.

Given the ammonia sampling that is needed, I understand that the above revisions will be submitted in three to four weeks.

I appreciate the effort you put into completing this application. I consider the above to be a very short list of revisions.

Thanks

Ray R. Jenkins, Jr.
Environmental Specialist Senior
Telephone: 804/527-5037
E-mail: ray.jenkins@deq.virginia.gov
Fax: 804/527-5106



Hanover Courthouse

HANOVER COUNTY

Established in 1720

Department of Public Utilities

Steven P. Herzog, P.E., Director

Gary A. Craft, P.E., Deputy Director

P. O. Box 470
Hanover, VA 23069-0470
Phone: (804) 365-6019
Fax: (804) 365-6245
Website: www.co.hanover.va.us

Frank W. Harksen, Jr.
Deputy County Administrator

February 27, 2012

HAND DELIVERED

Mr. Ray Jenkins
DEQ-PRO
4949-A Cox Road
Glen Allen, VA 23060

RE: Totopotomoy Wastewater Treatment Plant (VA0089915) VPDES Application

Dear Mr. Jenkins:

Enclosed is the original signed application for the re-issuance of VA0089915 and four copies as requested in your re-issuance reminder email. If you have any questions about this application, please call (804) 365-6701 or email me at mbellinghaus@co.hanover.va.us. Thank you for your time.

Sincerely,

Matthew Ellinghaus
Assistant Chief of Operations & Maintenance

FACILITY NAME AND PERMIT NUMBER:
Totopotomoy Wastewater Treatment Plant - VA0089915

Form Approved 1/14/99
OMB Number 2040-0086

FORM 2A NPDES

NPDES FORM 2A APPLICATION OVERVIEW

APPLICATION OVERVIEW

Form 2A has been developed in a modular format and consists of a "Basic Application Information" packet and a "Supplemental Application Information" packet. The Basic Application Information packet is divided into two parts. All applicants must complete Parts A and C. Applicants with a design flow greater than or equal to 0.1 mgd must also complete Part B. Some applicants must also complete the Supplemental Application Information packet. The following items explain which parts of Form 2A you must complete.

BASIC APPLICATION INFORMATION:

A. **Basic Application Information for all Applicants.** All applicants must complete questions A.1 through A.8. A treatment works that discharges effluent to surface waters of the United States must also answer questions A.9 through A.12.

B. **Additional Application Information for Applicants with a Design Flow ≥ 0.1 mgd.** All treatment works that have design flows greater than or equal to 0.1 million gallons per day must complete questions B.1 through B.6.

C. **Certification.** All applicants must complete Part C (Certification).

SUPPLEMENTAL APPLICATION INFORMATION:

D. **Expanded Effluent Testing Data.** A treatment works that discharges effluent to surface waters of the United States and meets one or more of the following criteria must complete Part D (Expanded Effluent Testing Data):

1. Has a design flow rate greater than or equal to 1 mgd,
2. Is required to have a pretreatment program (or has one in place), or
3. Is otherwise required by the permitting authority to provide the information.

E. **Toxicity Testing Data.** A treatment works that meets one or more of the following criteria must complete Part E (Toxicity Testing Data):

1. Has a design flow rate greater than or equal to 1 mgd,
2. Is required to have a pretreatment program (or has one in place), or
3. Is otherwise required by the permitting authority to submit results of toxicity testing.

F. **Industrial User Discharges and RCRA/CERCLA Wastes.** A treatment works that accepts process wastewater from any significant industrial users (SIUs) or receives RCRA or CERCLA wastes must complete Part F (Industrial User Discharges and RCRA/CERCLA Wastes). SIUs are defined as:

1. All industrial users subject to Categorical Pretreatment Standards under 40 Code of Federal Regulations (CFR) 403.6 and 40 CFR Chapter I, Subchapter N (see instructions); and
2. Any other industrial user that:
   a. Discharges an average of 25,000 gallons per day or more of process wastewater to the treatment works (with certain exclusions); or
   b. Contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the treatment plant; or
   c. Is designated as an SIU by the control authority.

G. **Combined Sewer Systems.** A treatment works that has a combined sewer system must complete Part G (Combined Sewer Systems).

ALL APPLICANTS MUST COMPLETE PART C (CERTIFICATION)

Form Approved 1/14/99
OMB Number 2040-0086

BASIC APPLICATION INFORMATION

PART A. BASIC APPLICATION INFORMATION FOR ALL APPLICANTS:

All treatment works must complete questions A.1 through A.8 of this Basic Application Information packet.

A.1. Facility Information.

Facility name: Totopotomoy Wastewater Treatment Plant

Mailing Address: P.O. Box 470
Hanover, VA 23069

Contact person: David Van Gelder

Title: Chief of Operations & Maintenance

Telephone number: (804) 365-6235

Facility Address (not P.O. Box): 9015 Pole Green Park Lane
Mechanicsville, VA 23116

A.2. Applicant Information. If the applicant is different from the above, provide the following:

Applicant name: Same As Above

Mailing Address:

Contact person:

Title:

Telephone number:

Is the applicant the owner or operator (or both) of the treatment works?

✓ owner ✓ operator

Indicate whether correspondence regarding this permit should be directed to the facility or the applicant.

_____ facility ✓ applicant

A.3. Existing Environmental Permits. Provide the permit number of any existing environmental permits that have been issued to the treatment works (include state-issued permits).

NPDES	VA0089915, VAN030051	PSD	
UIC		Other	
RCRA		Other	

A.4. Collection System Information. Provide information on municipalities and areas served by the facility. Provide the name and population of each entity and, if known, provide information on the type of collection system (combined vs. separate) and its ownership (municipal, private, etc.).

Name	Population Served	Type of Collection System	Ownership
Parts of Hanover County	Approx. 25,000	Separate	Municipal

Total population served Approx. 25,000

A.5. Indian Country.

a. Is the treatment works located in Indian Country?

_____ Yes ✓ No

b. Does the treatment works discharge to a receiving water that is either in Indian Country or that is upstream from (and eventually flows through) Indian Country?

_____ Yes ✓ No

A.6. Flow. Indicate the design flow rate of the treatment plant (i.e., the wastewater flow rate that the plant was built to handle). Also provide the average daily flow rate and maximum daily flow rate for each of the last three years. Each year's data must be based on a 12-month time period with the 12th month of "this year" occurring no more than three months prior to this application submittal.

a. Design flow rate 7.0 mgd

	Two Years Ago	Last Year	This Year	
b. Annual average daily flow rate	1.12	1.88	2.43	mgd
c. Maximum daily flow rate	2.14	3.63	4.98	mgd

A.7. Collection System. Indicate the type(s) of collection system(s) used by the treatment plant. Check all that apply. Also estimate the percent contribution (by miles) of each.

✓ Separate sanitary sewer	100 %
_____ Combined storm and sanitary sewer	_____ %

A.8. Discharges and Other Disposal Methods.

a. Does the treatment works discharge effluent to waters of the U.S.? ✓ Yes _____ No

If yes, list how many of each of the following types of discharge points the treatment works uses:

i. Discharges of treated effluent	1
ii. Discharges of untreated or partially treated effluent	N/A
iii. Combined sewer overflow points	N/A
iv. Constructed emergency overflows (prior to the headworks)	N/A
v. Other _____	N/A

b. Does the treatment works discharge effluent to basins, ponds, or other surface impoundments that do not have outlets for discharge to waters of the U.S.? _____ Yes ✓ No

If yes, provide the following for each surface impoundment:

Location: _____

Annual average daily volume discharged to surface impoundment(s) _____ mgd

Is discharge _____ continuous or _____ intermittent?

c. Does the treatment works land-apply treated wastewater? _____ Yes ✓ No

If yes, provide the following for each land application site:

Location: _____

Number of acres: _____

Annual average daily volume applied to site: _____ Mgd

Is land application _____ continuous or _____ intermittent?

d. Does the treatment works discharge or transport treated or untreated wastewater to another treatment works? _____ Yes ✓ No

If yes, describe the mean(s) by which the wastewater from the treatment works is discharged or transported to the other treatment works (e.g., tank truck, pipe).

_____

If transport is by a party other than the applicant, provide:

Transporter name: _____

Mailing Address: _____

_____

Contact person: _____

Title: _____

Telephone number: _____

For each treatment works that receives this discharge, provide the following:

Name: _____

Mailing Address: _____

_____

Contact person: _____

Title: _____

Telephone number: _____

If known, provide the NPDES permit number of the treatment works that receives this discharge. _____

Provide the average daily flow rate from the treatment works into the receiving facility. _____ mgd

e. Does the treatment works discharge or dispose of its wastewater in a manner not included in A.8.a through A.8.d above (e.g., underground percolation, well injection)? _____ Yes ✓ No

If yes, provide the following for each disposal method:

Description of method (including location and size of site(s) if applicable):

_____

Annual daily volume disposed of by this method: _____

Is disposal through this method _____ continuous or _____ intermittent?

WASTEWATER DISCHARGES:

If you answered "yes" to question A.8.a, complete questions A.9 through A.12 **once for each outfall** (including bypass points) through which effluent is discharged. Do not include information on combined sewer overflows in this section. **If you answered "no" to question A.8.a**, go to Part B, "Additional Application Information for Applicants with a Design Flow Greater than or Equal to 0.1 mgd."

A.9. Description of Outfall.

a. Outfall number: 001

b. Location:
Mechanicsville (City or town, if applicable) — 23116 (Zip Code)
Hanover (County) — Virginia (State)
37 degrees, 40.225 minutes N (Latitude) — 077 degrees, 11.493 minutes W (Longitude)

c. Distance from shore (if applicable): 40 ft.

d. Depth below surface (if applicable): 24 ft.

e. Average daily flow rate: 2.43 mgd

f. Does this outfall have either an intermittent or a periodic discharge? ____ Yes ✓ No (go to A.9.g.)

If yes, provide the following information:

Number of times per year discharge occurs: ____

Average duration of each discharge: ____

Average flow per discharge: ____ mgd

Months in which discharge occurs: ____

g. Is outfall equipped with a diffuser? ✓ Yes ____ No

A.10. Description of Receiving Waters.

a. Name of receiving water: Pamunkey River

b. Name of watershed (if known): York River Watershed

United States Soil Conservation Service 14-digit watershed code (if known): Unknown

c. Name of State Management/River Basin (if known): York River Basin

United States Geological Survey 8-digit hydrologic cataloging unit code (if known): Unknown

d. Critical low flow of receiving stream (if applicable):
acute 54 cfs chronic 59 cfs

e. Total hardness of receiving stream at critical low flow (if applicable): Unknown mg/l of $CaCO_3$

FACILITY NAME AND PERMIT NUMBER:
Totopotomoy Wastewater Treatment Plant - VA0089915

Form Approved 1/14/99
OMB Number 2040-0086

A.11. Description of Treatment.

a. What levels of treatment are provided? Check all that apply.

_____ Primary ✓ Secondary

✓ Advanced _____ Other. Describe: Biological Nutrient Removal

b. Indicate the following removal rates (as applicable):

Design BOD_5 removal or Design $CBOD_5$ removal	99 (actual)	%
Design SS removal	99 (actual)	%
Design P removal	99 (actual)	%
Design N removal	96 (actual)	%
Other _____	_____	%

c. What type of disinfection is used for the effluent from this outfall? If disinfection varies by season, please describe.

Ultra-violet light disinfection

If disinfection is by chlorination, is dechlorination used for this outfall? _____ Yes _____ No

d. Does the treatment plant have post aeration? ✓ Yes _____ No

A.12. Effluent Testing Information. All Applicants that discharge to waters of the US must provide effluent testing data for the following parameters. Provide the indicated effluent testing required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three samples and must be no more than four and one-half years apart.

Outfall number: 001

PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE		
	Value	Units	Value	Units	Number of Samples
pH (Minimum)	6.84	s.u.			
pH (Maximum)	7.38	s.u.			
Flow Rate	4.98	MGD	2.43	MGD	365
Temperature (Winter)	20.3	C	16.3	C	90
Temperature (Summer)	25.3	C	23	C	90

* For pH please report a minimum and a maximum daily value

POLLUTANT		MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML / MDL
		Conc.	Units	Conc.	Units	Number of Samples		
CONVENTIONAL AND NONCONVENTIONAL COMPOUNDS.								
BIOCHEMICAL OXYGEN	BOD-5							
DEMAND (Report one)	CBOD-5	3.2	MG/L	3.2	MG/L	365	S.M 5210B	5.0 mg/l
FECAL COLIFORM		199	N/CML	8.8	MG/L	365	S.M 9223D	1.0 cfu/100ml
TOTAL SUSPENDED SOLIDS (TSS)		6.6	MG/L	3.2	MG/L	52	S.M 2540D,A	1.0 mg/l

END OF PART A.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

BASIC APPLICATION INFORMATION

PART B. ADDITIONAL APPLICATION INFORMATION FOR APPLICANTS WITH A DESIGN FLOW GREATER THAN OR EQUAL TO 0.1 MGD (100,000 gallons per day).

All applicants with a design flow rate ≥ 0.1 mgd must answer questions B.1 through B.6. All others go to Part C (Certification).

B.1. Inflow and Infiltration. Estimate the average number of gallons per day that flow into the treatment works from inflow and/or infiltration.

Unknown gpd

Briefly explain any steps underway or planned to minimize inflow and infiltration.

See Attachment 1 for description.

B.2. Topographic Map. Attach to this application a topographic map of the area extending at least one mile beyond facility property boundaries. This map must show the outline of the facility and the following information. (You may submit more than one map if one map does not show the entire area.)

a. The area surrounding the treatment plant, including all unit processes.

b. The major pipes or other structures through which wastewater enters the treatment works and the pipes or other structures through which treated wastewater is discharged from the treatment plant. Include outfalls from bypass piping, if applicable.

c. Each well where wastewater from the treatment plant is injected underground.

d. Wells, springs, other surface water bodies, and drinking water wells that are: 1) within 1/4 mile of the property boundaries of the treatment works, and 2) listed in public record or otherwise known to the applicant.

e. Any areas where the sewage sludge produced by the treatment works is stored, treated, or disposed.

f. If the treatment works receives waste that is classified as hazardous under the Resource Conservation and Recovery Act (RCRA) by truck, rail, or special pipe, show on the map where that hazardous waste enters the treatment works and where it is treated, stored, and/or disposed.

See Attachment 2

B.3. Process Flow Diagram or Schematic. Provide a diagram showing the processes of the treatment plant, including all bypass piping and all backup power sources or redundancy in the system. Also provide a water balance showing all treatment units, including disinfection (e.g, chlorination and dechlorination). The water balance must show daily average flow rates at influent and discharge points and approximate daily flow rates between treatment units. Include a brief narrative description of the diagram.

See Attachment 3

B.4. Operation/Maintenance Performed by Contractor(s).

Are any operational or maintenance aspects (related to wastewater treatment and effluent quality) of the treatment works the responsibility of a contractor? ____Yes ✓ No

If yes, list the name, address, telephone number, and status of each contractor and describe the contractor's responsibilities (attach additional pages if necessary).

Name: _____

Mailing Address: _____

_____

Telephone Number: _____

Responsibilities of Contractor: _____

B.5. Scheduled Improvements and Schedules of Implementation. Provide information on any uncompleted implementation schedule or uncompleted plans for improvements that will affect the wastewater treatment, effluent quality, or design capacity of the treatment works. If the treatment works has several different implementation schedules or is planning several improvements, submit separate responses to question B.5 for each. (If none, go to question B.6.) See Attachment 4 for facility expansion plan

a. List the outfall number (assigned in question A.9) for each outfall that is covered by this implementation schedule.

_____

b. Indicate whether the planned improvements or implementation schedule are required by local, State, or Federal agencies.

____Yes ✓ No

c If the answer to B.5.b is "Yes," briefly describe, including new maximum daily inflow rate (if applicable).

_____

d. Provide dates imposed by any compliance schedule or any actual dates of completion for the implementation steps listed below, as applicable. For improvements planned independently of local, State, or Federal agencies, indicate planned or actual completion dates, as applicable. Indicate dates as accurately as possible.

	Schedule	Actual Completion
Implementation Stage	MM / DD / YYYY	MM / DD / YYYY
– Begin construction	___/___/_____	___/___/_____
– End construction	___/___/_____	___/___/_____
– Begin discharge	___/___/_____	___/___/_____
– Attain operational level	___/___/_____	___/___/_____

e. Have appropriate permits/clearances concerning other Federal/State requirements been obtained? ____Yes ____No

Describe briefly: _____

_____

B.6. EFFLUENT TESTING DATA (GREATER THAN O.1 MGD ONLY).

Applicants that discharge to waters of the US must provide effluent testing data for the following parameters. Provide the indicated effluent testing required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three pollutant scans and must be no more than four and one-half years old.

Outfall Number: 001

POLLUTANT	MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML / MDL
	Conc.	Units	Conc.	Units	Number of Samples		
CONVENTIONAL AND NONCONVENTIONAL COMPOUNDS.							
AMMONIA (as N)	<0.20	mg/l	<0.20	mg/l	1	EPA 350.1	0.20 mg/l
CHLORINE (TOTAL RESIDUAL, TRC)	<0.1	mg/l	<0.1	mg/l	3	Hach 8167	0.1 mg/l
DISSOLVED OXYGEN	13.36	mg/l	8.9	mg/l	1095	S.M 4500-O G	0.1 mg/l
TOTAL KJELDAHL NITROGEN (TKN)	6.8	mg/l	1.5	mg/l	1095	S.M 4500NH3F	0.050 mg/l
NITRATE PLUS NITRITE NITROGEN	7.3	mg/l	6.26	mg/l	156	EPA 351.2	0.05 mg/l
OIL and GREASE	<5.0	mg/l	<5.0	mg/l	3	EPA 1664A	5.0 mg/l
PHOSPHORUS (Total)	1.6	mg/l	0.3	mg/l	156	SM 4500-P B.5	0.1 mg/l
TOTAL DISSOLVED SOLIDS (TDS)	436	mg/l	391	mg/l	3	SM2540C	1.0 mg/l
OTHER							

END OF PART B.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

FACILITY NAME AND PERMIT NUMBER:

Totopotomoy Wastewater Treatment Plant - VA0089915

Form Approved 1/14/99
OMB Number 2040-0086

BASIC APPLICATION INFORMATION

PART C. CERTIFICATION

All applicants must complete the Certification Section. Refer to instructions to determine who is an officer for the purposes of this certification. All applicants must complete all applicable sections of Form 2A, as explained in the Application Overview. Indicate below which parts of Form 2A you have completed and are submitting. By signing this certification statement, applicants confirm that they have reviewed Form 2A and have completed all sections that apply to the facility for which this application is submitted.

Indicate which parts of Form 2A you have completed and are submitting:

✓ Basic Application Information packet

Supplemental Application Information packet:

✓ Part D (Expanded Effluent Testing Data)

✓ Part E (Toxicity Testing: Biomonitoring Data)

_____ Part F (Industrial User Discharges and RCRA/CERCLA Wastes)

_____ Part G (Combined Sewer Systems)

ALL APPLICANTS MUST COMPLETE THE FOLLOWING CERTIFICATION.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and official title: Cecil R. Harris, Jr., County Administrator

Signature: Cecil R. Harris

Telephone number: (804) 365-6005

Date signed: 2/23/12

Upon request of the permitting authority, you must submit any other information necessary to assess wastewater treatment practices at the treatment works or identify appropriate permitting requirements.

SEND COMPLETED FORMS TO:

SUPPLEMENTAL APPLICATION INFORMATION

PART D. EXPANDED EFFLUENT TESTING DATA

Refer to the directions on the cover page to determine whether this section applies to the treatment works.

Effluent Testing: 1.0 mgd and Pretreatment Treatment Works. If the treatment works has a design flow greater than or equal to 1.0 mgd or it has (or is required to have) a pretreatment program, or is otherwise required by the permitting authority to provide the data, then provide effluent testing data for the following pollutants. Provide the indicated effluent testing information and any other information required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analyses conducted using 40 CFR Part 136 methods. In addition, these data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. Indicate in the blank rows provided below any data you may have on pollutants not specifically listed in this form. At a minimum, effluent testing data must be based on at least three pollutant scans and must be no more than four and one-half years old.

Outfall number: 001 (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
METALS (TOTAL RECOVERABLE), CYANIDE, PHENOLS, AND HARDNESS.											
ANTIMONY	<20	ug/l	<184	g/day	<20	ug/l	<184	g/day	3	EPA 200.8	20 ug/l
ARSENIC	<20	ug/l	<184	g/day	<20	ug/l	<184	g/day	3	EPA 200.8	20 ug/l
BERYLLIUM	<1.0	ug/l	<9.2	g/day	<1.0	ug/l	<9.2	g/day	3	EPA 200.8	1.0 ug/l
CADMIUM	<0.1	ug/l	<0.92	g/day	<0.1	ug/l	<0.92	g/day	3	EPA 200.8	0.1 ug/l
CHROMIUM	<5.0	ug/l	<46	g/day	<5.0	ug/l	<46	g/day	3	EPA 200.8	5.0 ug/l
COPPER	1.62	ug/l	14.9	g/day	1.38	ug/l	12.7	g/day	3	EPA 200.8	0.5 ug/l
LEAD	<1.0	ug/l	<9.2	g/day	<1.0	ug/l	<9.2	g/day	3	EPA 200.8	1.0 ug/l
MERCURY	<0.2	ug/l	<1.8	g/day	<0.2	ug/l	<1.8	g/day	3	EPA 245.1	0.2 ug/l
NICKEL	<2.0	ug/l	<18.4	g/day	1.5	ug/l	<18.4	g/day	3	EPA 200.8	0.5 ug/l
SELENIUM	<2.0	ug/l	<18.4	g/day	<2.0	ug/l	<18.4	g/day	3	EPA 200.8	2.0 ug/l
SILVER	<0.1	ug/l	<0.92	g/day	<0.1	ug/l	<0.92	g/day	3	EPA 200.8	0.1 ug/l
THALLIUM	<0.1	ug/l	<0.92	g/day	<0.1	ug/l	<0.92	g/day	3	EPA 200.8	0.1 ug/l
ZINC	37.5	ug/l	344.9	g/day	36.7	ug/l	337.6	g/day	3	EPA 200.8	1.0 ug/l
CYANIDE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	ASTM D 4282	10 ug/l
TOTAL PHENOLIC COMPOUNDS	<0.05	ug/l	<0.46	g/day	<0.05	ug/l	<0.46	g/day	3	EPA 420.4	0.05 ug/l
HARDNESS (AS $CaCO_3$)	79.3	mg/l	729.4	kg/d	76.8	mg/l	706.4	kg/d	3	SM2340B	0.2 mg/l
Use this space (or a separate sheet) to provide information on other metals requested by the permit writer.											

FACILITY NAME AND PERMIT NUMBER:
Totopotomoy Wastewater Treatment Plant - VA0089915

Form Approved 1/14/99
OMB Number 2040-0086

Outfall number: 001 (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
VOLATILE ORGANIC COMPOUNDS.											
ACROLEIN	<50	ug/l	<460	g/day	<50	ug/l	<460	g/day	3	EPA 624	50 ug/l
ACRYLONITRILE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
BENZENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
BROMOFORM	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
CARBON TETRACHLORIDE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
CLOROBENZENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
CHLORODIBROMO-METHANE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
CHLOROETHANE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
2-CHLORO-ETHYLVINYL ETHER	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
CHLOROFORM	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
DICHLOROBROMO-METHANE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
1,1-DICHLOROETHANE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
1,2-DICHLOROETHANE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
TRANS-1,2-DICHLORO-ETHYLENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
1,1-DICHLOROETHYLENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
1,2-DICHLOROPROPANE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
1,3-DICHLORO-PROPYLENE	<20	ug/l	<184	g/day	<20	ug/l	<184	g/day	3	EPA 624	20 ug/l
ETHYLBENZENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
METHYL BROMIDE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
METHYL CHLORIDE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
METHYLENE CHLORIDE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
1,1,2,2-TETRACHLORO-ETHANE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
TETRACHLORO-ETHYLENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
TOLUENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l

FACILITY NAME AND PERMIT NUMBER:
Totopotomoy Wastewater Treatment Plant - VA0089915

Form Approved 1/14/99
OMB Number 2040-0086

Outfall number: 001 (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
1,1,1-TRICHLOROETHANE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
1,1,2-TRICHLOROETHANE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
TRICHLORETHYLENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
VINYL CHLORIDE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
Use this space (or a separate sheet) to provide information on other volatile organic compounds requested by the permit writer.											
ACID-EXTRACTABLE COMPOUNDS											
P-CHLORO-M-CRESOL	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
2-CHLOROPHENOL	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
2,4-DICHLOROPHENOL	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
2,4-DIMETHYLPHENOL	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
4,6-DINITRO-O-CRESOL	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
2,4-DINITROPHENOL	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
2-NITROPHENOL	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
4-NITROPHENOL	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
PENTACHLOROPHENOL	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
PHENOL	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
2,4,6-TRICHLOROPHENOL	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
Use this space (or a separate sheet) to provide information on other acid-extractable compounds requested by the permit writer.											
BASE-NEUTRAL COMPOUNDS.											
ACENAPHTHENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
ACENAPHTHYLENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
ANTHRACENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
BENZIDINE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
BENZO(A)ANTHRACENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
BENZO(A)PYRENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l

FACILITY NAME AND PERMIT NUMBER:
Totopotomoy Wastewater Treatment Plant - VA0089915

Form Approved 1/14/99
OMB Number 2040-0086

Outfall number: 001 (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
3,4 BENZO-FLUORANTHENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
BENZO(GHI)PERYLENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
BENZO(K)FLUORANTHENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
BIS (2-CHLOROETHOXY) METHANE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
BIS (2-CHLOROETHYL)-ETHER	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
BIS (2-CHLOROISO-PROPYL) ETHER	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
BIS (2-ETHYLHEXYL) PHTHALATE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
4-BROMOPHENYL PHENYL ETHER	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
BUTYL BENZYL PHTHALATE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
2-CHLORONAPHTHALENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
4-CHLORPHENYL PHENYL ETHER	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
CHRYSENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
DI-N-BUTYL PHTHALATE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
DI-N-OCTYL PHTHALATE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
DIBENZO(A,H) ANTHRACENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
1,2-DICHLOROBENZENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
1,3-DICHLOROBENZENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
1,4-DICHLOROBENZENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 624	10 ug/l
3,3-DICHLOROBENZIDINE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
DIETHYL PHTHALATE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
DIMETHYL PHTHALATE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
2,4-DINITROTOLUENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
2,6-DINITROTOLUENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
1,2-DIPHENYLHYDRAZINE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l

FACILITY NAME AND PERMIT NUMBER:
Totopotomoy Wastewater Treatment Plant - VA0089915

Form Approved 1/14/99
OMB Number 2040-0086

Outfall number: 001 (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
FLUORANTHENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
FLUORENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
HEXACHLOROBENZENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
HEXACHLOROBUTADIENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
HEXACHLOROCYCLO-PENTADIENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
HEXACHLOROETHANE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
INDENO(1,2,3-CD)PYRENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
ISOPHORONE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
NAPHTHALENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
NITROBENZENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
N-NITROSODI-N-PROPYLAMINE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
N-NITROSODI- METHYLAMINE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
N-NITROSODI-PHENYLAMINE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
PHENANTHRENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
PYRENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l
1,2.4-TRICHLOROBENZENE	<10	ug/l	<92	g/day	<10	ug/l	<92	g/day	3	EPA 625	10 ug/l

Use this space (or a separate sheet) to provide information on other base-neutral compounds requested by the permit writer.

Use this space (or a separate sheet) to provide information on other pollutants (e.g., pesticides) requested by the permit writer.

END OF PART D.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

FACILITY NAME AND PERMIT NUMBER:
Totopotomoy Wastewater Treatment Plant - VA0089915

Form Approved 1/14/99
OMB Number 2040-0086

SUPPLEMENTAL APPLICATION INFORMATION

PART E. TOXICITY TESTING DATA

POTWs meeting one or more of the following criteria must provide the results of whole effluent toxicity tests for acute or chronic toxicity for each of the facility's discharge points: 1) POTWs with a design flow rate greater than or equal to 1.0 mgd; 2) POTWs with a pretreatment program (or those that are required to have one under 40 CFR Part 403); or 3) POTWs required by the permitting authority to submit data for these parameters.

- At a minimum, these results must include quarterly testing for a 12-month period within the past 1 year using multiple species (minimum of two species), or the results from four tests performed at least annually in the four and one-half years prior to the application, provided the results show no appreciable toxicity, and testing for acute and/or chronic toxicity, depending on the range of receiving water dilution. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136.
- In addition, submit the results of any other whole effluent toxicity tests from the past four and one-half years. If a whole effluent toxicity test conducted during the past four and one-half years revealed toxicity, provide any information on the cause of the toxicity or any results of a toxicity reduction evaluation, if one was conducted.
- If you have already submitted any of the information requested in Part E, you need not submit it again. Rather, provide the information requested in question E.4 for previously submitted information. If EPA methods were not used, report the reasons for using alternate methods. If test summaries are available that contain all of the information requested below, they may be submitted in place of Part E.

If no biomonitoring data is required, do not complete Part E. Refer to the Application Overview for directions on which other sections of the form to complete.

E.1. Required Tests. See Attachment 5 for Toxicity test data.

Indicate the number of whole effluent toxicity tests conducted in the past four and one-half years.

✓ chronic (6) ____ acute

E.2. Individual Test Data. Complete the following chart for each whole effluent toxicity test conducted in the last four and one-half years. Allow one column per test (where each species constitutes a test). Copy this page if more than three tests are being reported.

	Test number:_____	Test number:_____	Test number:_____
a. Test information.			
Test species & test method number			
Age at initiation of test			
Outfall number			
Dates sample collected			
Date test started			
Duration			
b. Give toxicity test methods followed.			
Manual title			
Edition number and year of publication			
Page number(s)			
c. Give the sample collection method(s) used. For multiple grab samples, indicate the number of grab samples used.			
24-Hour composite			
Grab			
d. Indicate where the sample was taken in relation to disinfection. (Check all that apply for each)			
Before disinfection			
After disinfection			
After dechlorination			

	Test number:_____	Test number:_____	Test number:_____
e. Describe the point in the treatment process at which the sample was collected.			
Sample was collected:			
f. For each test, include whether the test was intended to assess chronic toxicity, acute toxicity, or both.			
Chronic toxicity			
Acute toxicity			
g. Provide the type of test performed.			
Static			
Static-renewal			
Flow-through			
h. Source of dilution water. If laboratory water, specify type; if receiving water, specify source.			
Laboratory water			
Receiving water			
i. Type of dilution water. It salt water, specify "natural" or type of artificial sea salts or brine used.			
Fresh water			
Salt water			
j. Give the percentage effluent used for all concentrations in the test series.			
k. Parameters measured during the test. (State whether parameter meets test method specifications)			
pH			
Salinity			
Temperature			
Ammonia			
Dissolved oxygen			
l. Test Results.			
Acute:			
Percent survival in 100% effluent	%	%	%
LC_{50}			
95% C.I.	%	%	%
Control percent survival	%	%	%
Other (describe)			

Chronic:			
NOEC	%	%	%
IC_{25}	%	%	%
Control percent survival	%	%	%
Other (describe)			

m. Quality Control/Quality Assurance.

Is reference toxicant data available?			
Was reference toxicant test within acceptable bounds?			
What date was reference toxicant test run (MM/DD/YYYY)?			
Other (describe)			

E.3. Toxicity Reduction Evaluation. Is the treatment works involved in a Toxicity Reduction Evaluation?

____Yes ✓ No If yes, describe: _____

_____

_____

E.4. Summary of Submitted Biomonitoring Test Information. If you have submitted biomonitoring test information, or information regarding the cause of toxicity, within the past four and one-half years, provide the dates the information was submitted to the permitting authority and a summary of the results.

Date submitted: _____ (MM/DD/YYYY)

Summary of results: (see instructions)

_____

_____

END OF PART E.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE.

SUPPLEMENTAL APPLICATION INFORMATION

PART F. INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES

All treatment works receiving discharges from significant industrial users or which receive RCRA, CERCLA, or other remedial wastes must complete Part F.

GENERAL INFORMATION:

F.1. Pretreatment Program. Does the treatment works have, or is it subject to, an approved pretreatment program?

____Yes____No

F.2. Number of Significant Industrial Users (SIUs) and Categorical Industrial Users (CIUs). Provide the number of each of the following types of industrial users that discharge to the treatment works.

a. Number of non-categorical SIUs. _____

b. Number of CIUs. _____

SIGNIFICANT INDUSTRIAL USER INFORMATION:

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, copy questions F.3 through F.8 and provide the information requested for each SIU.

F.3. Significant Industrial User Information. Provide the name and address of each SIU discharging to the treatment works. Submit additional pages as necessary.

Name: _____

Mailing Address: _____

_____

F.4. Industrial Processes. Describe all of the industrial processes that affect or contribute to the SIU's discharge.

_____

F.5. Principal Product(s) and Raw Material(s). Describe all of the principal processes and raw materials that affect or contribute to the SIU's discharge.

Principal product(s): _____

Raw material(s): _____

F.6. Flow Rate.

a. Process wastewater flow rate. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

_____ gpd (_____continuous or _____intermittent)

b. Non-process wastewater flow rate. Indicate the average daily volume of non-process wastewater flow discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

_____ gpd (_____continuous or _____intermittent)

F.7. Pretreatment Standards. Indicate whether the SIU is subject to the following:

a. Local limits ____Yes ____No

b. Categorical pretreatment standards ____Yes ____No

If subject to categorical pretreatment standards, which category and subcategory?

_____

F.8. Problems at the Treatment Works Attributed to Waste Discharged by the SIU. Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years?

____Yes____No If yes, describe each episode.

_____

_____

RCRA HAZARDOUS WASTE RECEIVED BY TRUCK, RAIL, OR DEDICATED PIPELINE:

F.9. RCRA Waste. Does the treatment works receive or has it in the past three years received RCRA hazardous waste by truck, rail, or dedicated pipe? ____Yes ___No (go to F.12.)

F.10. Waste Transport. Method by which RCRA waste is received (check all that apply):

_____Truck _____Rail _____Dedicated Pipe

F.11. Waste Description. Give EPA hazardous waste number and amount (volume or mass, specify units).

EPA Hazardous Waste Number	Amount	Units

CERCLA (SUPERFUND) WASTEWATER, RCRA REMEDIATION/CORRECTIVE ACTION WASTEWATER, AND OTHER REMEDIAL ACTIVITY WASTEWATER:

F.12. Remediation Waste. Does the treatment works currently (or has it been notified that it will) receive waste from remedial activities?

____Yes (complete F.13 through F.15.) ____No

Provide a list of sites and the requested information (F.13 - F.15.) for each current and future site.

F.13. Waste Origin. Describe the site and type of facility at which the CERCLA/RCRA/or other remedial waste originates (or is expected to originate in the next five years).

_____

_____

_____

F.14. Pollutants. List the hazardous constituents that are received (or are expected to be received). Include data on volume and concentration, if known. (Attach additional sheets if necessary).

_____

_____

F.15. Waste Treatment.

a. Is this waste treated (or will it be treated) prior to entering the treatment works?

____Yes ____No

If yes, describe the treatment (provide information about the removal efficiency):

_____

_____

b. Is the discharge (or will the discharge be) continuous or intermittent?

____Continuous ____Intermittent If intermittent, describe discharge schedule.

_____

END OF PART F.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

SUPPLEMENTAL APPLICATION INFORMATION

PART G. COMBINED SEWER SYSTEMS

If the treatment works has a combined sewer system, complete Part G.

G.1. System Map. Provide a map indicating the following: (may be included with Basic Application Information)

a. All CSO discharge points.

b. Sensitive use areas potentially affected by CSOs (e.g., beaches, drinking water supplies, shellfish beds, sensitive aquatic ecosystems, and outstanding natural resource waters).

c. Waters that support threatened and endangered species potentially affected by CSOs.

G.2. System Diagram. Provide a diagram, either in the map provided in G.1. or on a separate drawing, of the combined sewer collection system that includes the following information:

a. Locations of major sewer trunk lines, both combined and separate sanitary.

b. Locations of points where separate sanitary sewers feed into the combined sewer system.

c. Locations of in-line and off-line storage structures.

d. Locations of flow-regulating devices.

e. Locations of pump stations.

CSO OUTFALLS:

Complete questions G.3 through G.6 once for each CSO discharge point.

G.3. Description of Outfall.

a. Outfall number _____

b. Location _____
(City or town, if applicable) (Zip Code)

_____
(County) (State)

_____
(Latitude) (Longitude)

c. Distance from shore (if applicable) _____ ft.

d. Depth below surface (if applicable) _____ ft.

e. Which of the following were monitored during the last year for this CSO?

____Rainfall ____CSO pollutant concentrations ____CSO frequency

____CSO flow volume ____Receiving water quality

f. How many storm events were monitored during the last year? _____

G.4. CSO Events.

a. Give the number of CSO events in the last year.

_____ events (___ actual or ___ approx.)

b. Give the average duration per CSO event.

_____ hours (____ actual or ____ approx.)

c. Give the average volume per CSO event.

_____ million gallons (_____ actual or _____ approx.)

d. Give the minimum rainfall that caused a CSO event in the last year.

_____ inches of rainfall

G.5. Description of Receiving Waters.

a. Name of receiving water: _____

b. Name of watershed/river/stream system: _____

United States Soil Conservation Service 14-digit watershed code (if known): _____

c. Name of State Management/River Basin: _____

United States Geological Survey 8-digit hydrologic cataloging unit code (if known): _____

G.6. CSO Operations.

Describe any known water quality impacts on the receiving water caused by this CSO (e.g., permanent or intermittent beach closings, permanent or intermittent shell fish bed closings, fish kills, fish advisories, other recreational loss, or violation of any applicable State water quality standard).

_____

_____

END OF PART G.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE.

Totopotomoy Wastewater Treatment Plant (TWWTP)
VA0089915

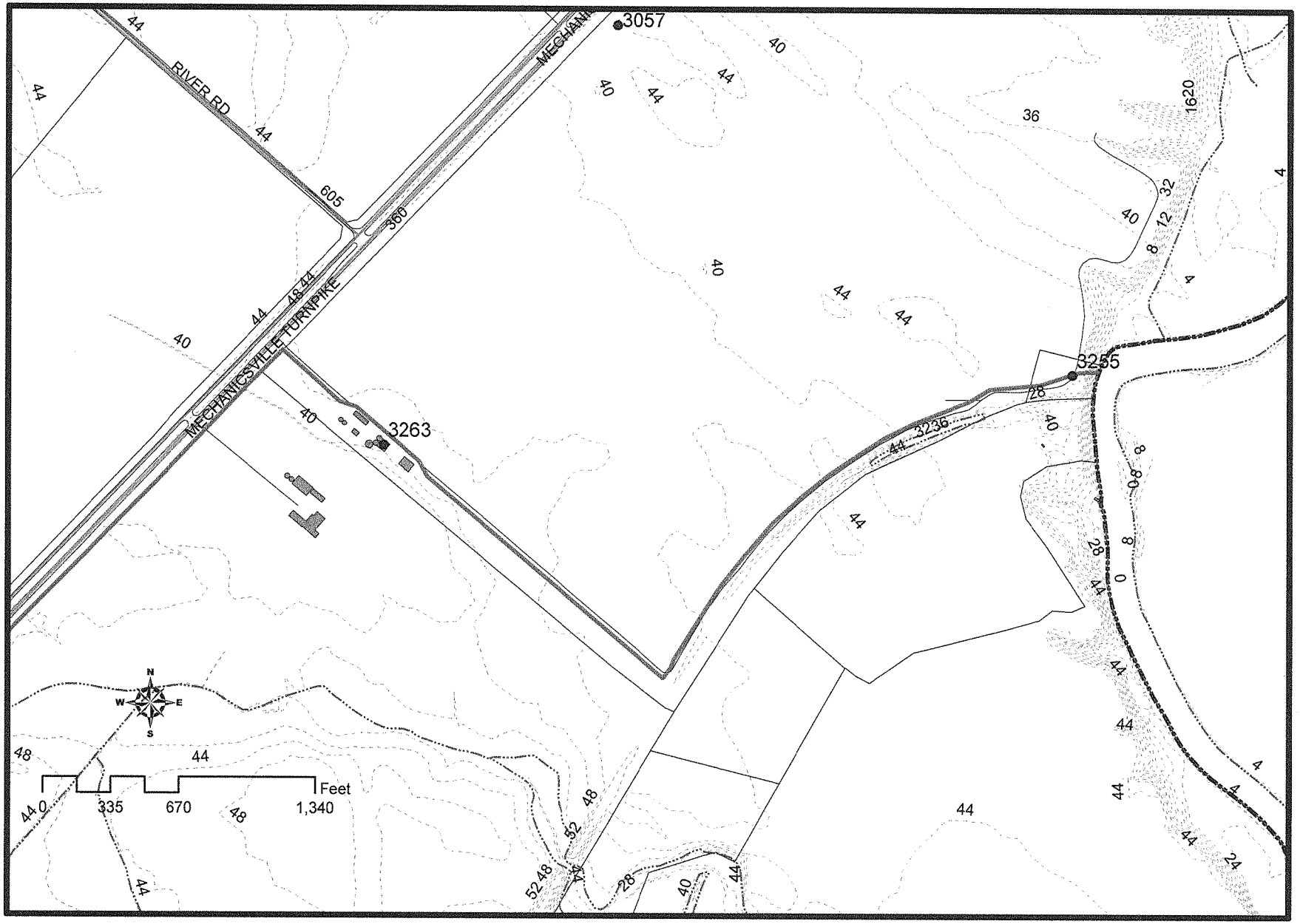
Attachment 1

EPA Form 2A Part B.1

The daily volume of flow to the plant due to inflow and infiltration (I/I) varies and tends to be more severe after extended periods of wet weather. Hanover County is committed to reducing I/I induced flow and has aggressively addressed the problem by conducting numerous studies and rehabilitation projects to achieve this goal which have greatly reduced I/I.

Routine comprehensive CCTV inspection of the County collection system allows DPU to locate, identify and repair sanitary sewer problems that may contribute to the I/I problems from our annual maintenance budget. As needed, larger areas are studies and rehabilitated through CIP projects to renew the sanitary sewer infrastructure. All records of this and other work is maintained by Hanover County's Department of Public Utilities and available for review.

Totopotomoy Wastewater Treatment Plant
VA0089915
Attachment 2 - Outfall Topographic Map



Totopotomoy Wastewater Treatment Plant
VA0089915
Attachment 2 - Facility Topographic Map

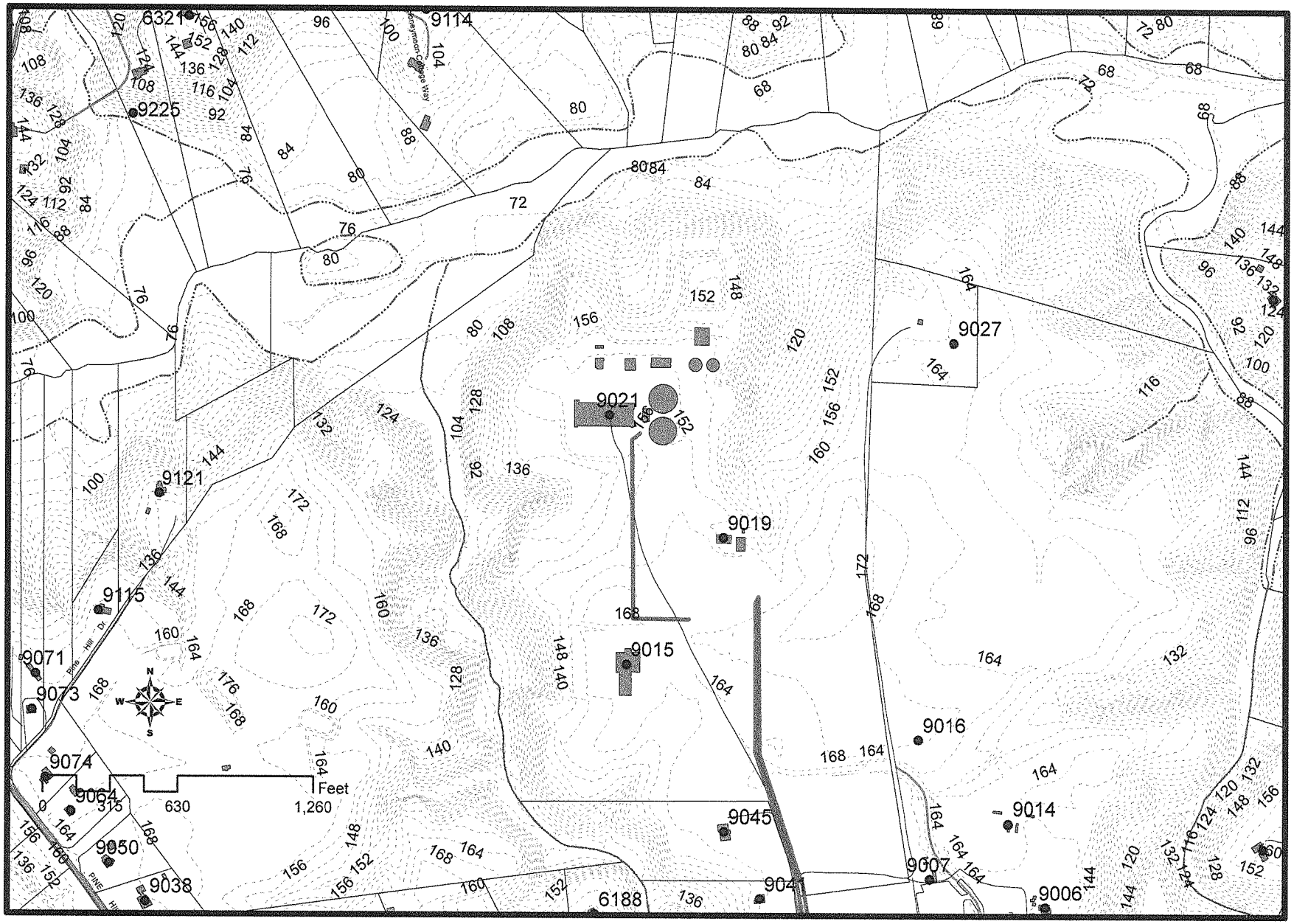
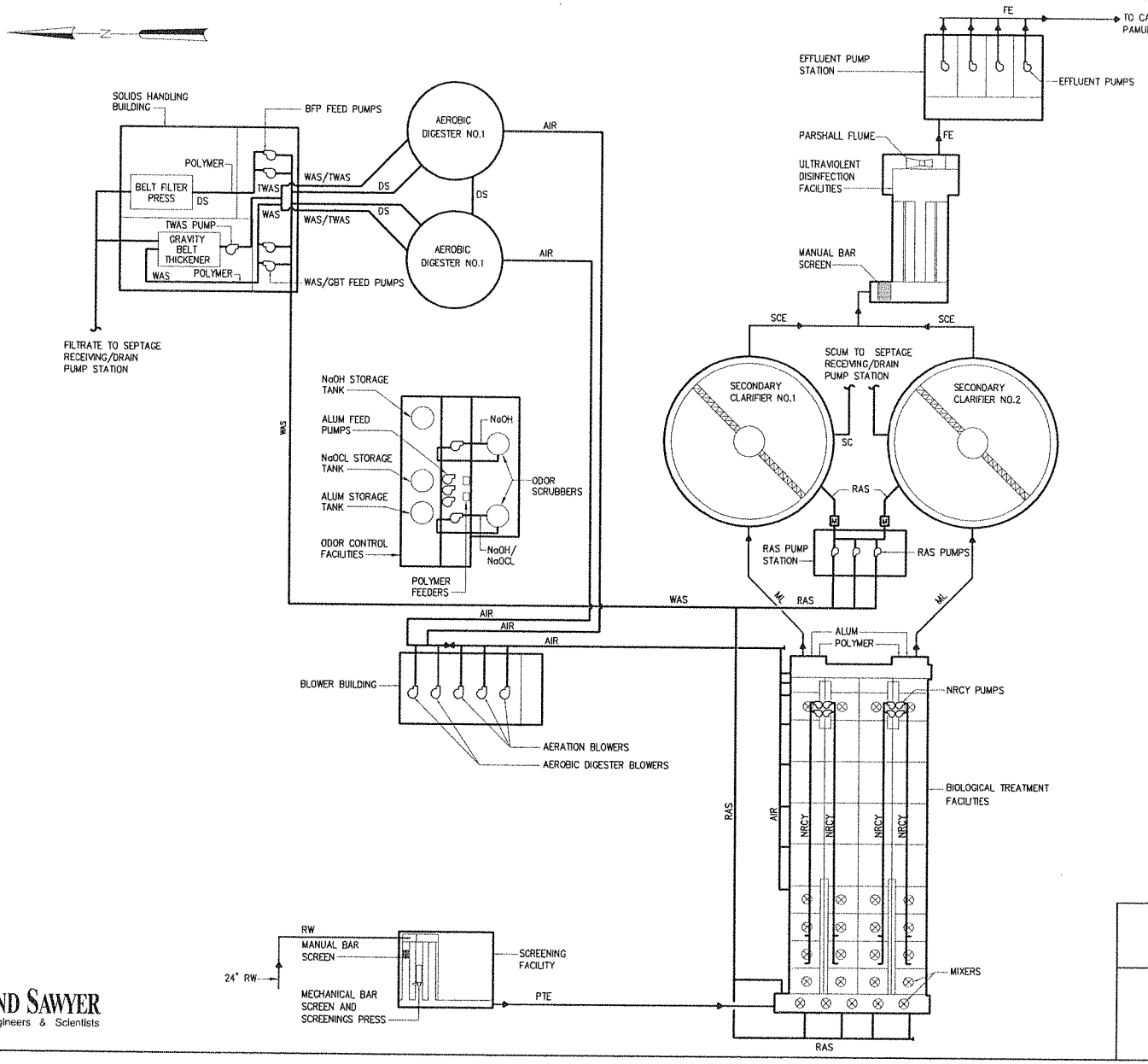


Figure 1-2



LEGEND

BFP	BELT FILTER PRESS
DS	DIGESTED SLUDGE
FE	FINAL EFFLUENT
GBT	GRAVITY BELT THICKENER
ML	MIXED LIQUOR
NaOCL	SODIUM HYPOCHLORITE
NaOH	SODIUM HYDROXIDE
NRCY	NITRIFIED RECYCLE
PTE	PRELIMINARY TREATMENT EFFLUENT
RAS	RETURN ACTIVATED SLUDGE
RW	RAW WASTEWATER
SC	SCUM
SCE	SECONDARY CLARIFIER EFFLUENT
TWAS	THICKENED WASTE ACTIVATED SLUDGE
WAS	WASTE ACTIVATED SLUDGE

PRIMARY FLOW PATH

HAZEN AND SAWYER
Environmental Engineers & Scientists

TOTOPOTOMOY WWTP
HANOVER COUNTY, VIRGINIA

Attachment 3
PROCESS FLOW SCHEMATIC

Totopotomoy Wastewater Treatment Plant
VA0089915

Attachment 4

Form 2A – B5. Scheduled Improvements and Scheduled Implementations - Facility Expansions

Construction plans for improvements to the Totopotomoy WWTP were submitted to the DEQ-PRO and CTCs dated August 26, 2011 have been issued to Hanover County – please reference these documents for project specifics..

Totopotomoy Wastewater Treatment Plant
VA0089915
2012 Reissuance

EPA Form 2A Part E. Attachment 5 - Toxicity Testing Data

E.2. Individual Test Data

		Test #1	Test #2	Test #3	Test #4	Test #5	Test #6
a. Test Information							
	Test species & test method number	C. dubia EPA 1002.0	P. promelas EPA 1000.0	C. dubia EPA 1002.0	P. promelas EPA 1000.0	C. dubia EPA 1002.0	P. promelas EPA 1000.0
	Age at initiation of test	< 24 hours	24-48 hours	< 24 hours	24-48 hours	< 24 hours	24-48 hours
	Outfall number	001	001	001	001	001	001
	Dates sample collected	05/22-27/2011		11/28-12/3/2010		10/11-16/2009	
	Date test started	5/24/2011	5/24/2011	11/29/2010	11/29/2010	10/12/2009	10/12/2009
	Duration	7 Days	7 days	7 Days	7 days	7 days	7 days
b. Give toxicity test methods followed							
	Manual title	EPA/600/4-90/027F		EPA/600/4-90/027F		EPA/600/4-90/027F	
	Edition number and year of publication	4th edition, 1993		4th edition, 1993		4th edition, 1993	
	Page number(s)	Unknown		Unknown		Unknown	
c. Give the sample collection method(s) used. For multiple grab samples, indicate the number of grab samples used.							
	24-Hour composite	X	X	X	X	X	X
	Grab						
d. Indicate where the sample was taken in relation to disinfection. (Check all that apply for each)							
	Before disinfection						
	After disinfection	X	X	X	X	X	X
	After dechlorination						
e. Describe the point in the treatment process at which the sample was collected.							
	Sample was collected:	Effluent sampling point		Effluent sampling point		Effluent sampling point	
f. For each test, include whether the test was intended to assess chronic toxicity, acute toxicity, or both.							
	Chronic toxicity	X	X	X	X	X	X
	Acute toxicity						
g. Provide the type of test performed.							
	Static						
	Static-renewal	X	X	X	X	X	X
	Flow-through						
h. Source of dilution water. If laboratory water, specity type. If receiving water, specify source.							
	Laboratory water	Moderately hard synthetic freshwater made with ASTM Type I deionized water		Moderately hard synthetic freshwater made with ASTM Type I deionized water		Moderately hard synthetic freshwater made with ASTM Type I deionized water	
	Receiving water						
i. Type of dilution water. If salt water, specify "natural" or type of artificial sea salts or brine used.							
	Fresh water	X	X	X	X	X	X
	Salt water						
j. Give the percentage effluent used for all concentrations in the test series.							
		3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
		8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
		11.0%	11.0%	11.0%	11.0%	18.0%	18.0%
		43.0%	43.0%	43.0%	43.0%	43.0%	43.0%
		100%	100%	100%	100%	100%	100%
k. Parameters measured during the test. (State whether parameter meets test method specifications)							
	pH	Yes	Yes	Yes	Yes	Yes	Yes
	Salinity	Not Tested		Not Tested		Not Tested	
	Temperature	Yes	Yes	Yes	Yes	Yes	Yes
	Ammonia	Not Tested		Not Tested		Not Tested	
	Dissolved oxygen	Yes	Yes	Yes	Yes	Yes	Yes
l. Test Results							
	Acute:						
	Percent survival in 100% effluent						
	LC50						
	95% C.I.						
	Control percent survival						
	Other (describe)						
	Chronic:						
	NOEC	100%	100%	100%	100%	100%	100%
	IC25	>100%	>100%	>100%	>100%	>100%	>100%
	Control percent survival	100%	98%	100%	98%	100%	97.5
	Other (describe)						
m. Quality Control/Quality Assurance							
	Is reference toxicant data available?	Yes	Yes	Yes	Yes	Yes	Yes
	Was reference toxicant test within acceptable bounds?	Yes	Yes	Yes	Yes	Yes	Yes
	What date was reference toxicant test run?	5/24/2011	5/24/2011	11/1/2010	11/30/2010	10/1/2009	10/12/2009
	Other (describe)						

FACILITY NAME: Totopotomoy Wastewater Treatment Plant **VPDES PERMIT NUMBER:** VA0089915

VPDES SEWAGE SLUDGE PERMIT APPLICATION FORM

SCREENING INFORMATION

This application is divided into sections. Sections A pertain to all applicants. The applicability of Sections B, C and D depend on your facility's sewage sludge use or disposal practices. The information provided on this page will help you determine which sections to fill out.

1. All applicants must complete Section A (General Information).

2. Will this facility generate sewage sludge? X Yes __No

   Will this facility derive a material from sewage sludge? __Yes X No

   If you answered Yes to either, complete Section B (Generation Of Sewage Sludge Or Preparation Of A Material Derived From Sewage Sludge).

3. Will this facility apply sewage sludge to the land? __Yes X No

   Will sewage sludge from this facility be applied to the land? __Yes X No

   If you answered No to both questions above, skip Section C.

   If you answered Yes to either, answer the following three questions:

   a. Will the sewage sludge from this facility meet the ceiling concentrations, pollutant concentrations, Class A pathogen reduction requirements and one of the vector attraction reduction requirements 1-8, as identified in the instructions?
   __Yes __No

   b. Will sewage sludge from this facility be placed in a bag or other container for sale or give-away for application to the land? __Yes __No

   c. Will sewage sludge from this facility be sent to another facility for treatment or blending? __Yes __No

   If you answered No to all three, complete Section C (Land Application Of Bulk Sewage Sludge).

   If you answered Yes to a, b or c, skip Section C.

4. Do you own or operate a surface disposal site? __Yes X No

   If Yes, complete Section D (Surface Disposal).

FACILITY NAME: Totopotomoy Wastewater Treatment Plant **VPDES PERMIT NUMBER:** VA0089915

SECTION A. GENERAL INFORMATION

All applicants must complete this section.

1. Facility Information.
   a. Facility name: Totopotomoy Wastewater Treatment Plant
   b. Contact person: David Van Gelder
      Title: Chief of Operations & Maintenance
      Phone: ( ) (804) 365-6235
   c. Mailing address:
      Street or P.O. Box: P.O. Box 470
      City or Town: Hanover State: Virginia Zip: 23069
   d. Facility location:
      Street or Route #: 9015 Pole Green Park Lane
      County: Hanover County
      City or Town: Mechanicsville State: Virginia Zip: 23116
   e. Is this facility a Class I sludge management facility? ___Yes X No
   f. Facility design flow rate: 7.0 MGD mgd
   g. Total population served: Approximately 25,000
   h. Indicate the type of facility:
      X Publicly owned treatment works (POTW)
      ___ Privately owned treatment works
      ___ Federally owned treatment works
      ___ Blending or treatment operation
      ___ Surface disposal site
      ___ Other (describe): _____

2. Applicant Information. If the applicant is different from the above, provide the following:
   a. Applicant name: Same As Above
   b. Mailing address:
      Street or P.O. Box: _____
      City or Town: _____ State: _____ Zip: _____
   c. Contact person: _____
      Title: _____
      Phone: ( ) _____
   d. Is the applicant the owner or operator (or both) of this facility?
      X owner X operator
   e. Should correspondence regarding this permit be directed to the facility or the applicant? (Check one)
      _____ facility X applicant

3. Permit Information.
   a. Facility's VPDES permit number (if applicable): VA0089915, VAN030051
   b. List on this form or an attachment, all other federal, state or local permits or construction approvals received or applied for that regulate this facility's sewage sludge management practices:

Permit Number:	Type of Permit:
None	

4. Indian Country. Does any generation, treatment, storage, application to land or disposal of sewage sludge from this facility occur in Indian Country? ___Yes X No If yes, describe:

_____

5. Topographic Map. Provide a topographic map or maps (or other appropriate maps if a topographic map is unavailable) that shows the following information. Maps should include the area one mile beyond all property boundaries of the facility: See Attachment 1

   a. Location of all sewage sludge management facilities, including locations where sewage sludge is generated, stored, treated, or disposed.

   b. Location of all wells, springs, and other surface water bodies listed in public records or otherwise known to the applicant within 1/4 mile of the property boundaries.

6. Line Drawing. Provide a line drawing and/or a narrative description that identifies all sewage sludge processes that will be employed during the term of the permit including all processes used for collecting, dewatering, storing, or treating sewage sludge, the destination(s) of all liquids and solids leaving each unit, and all methods used for pathogen reduction and vector attraction reduction. See Attached Process Narrative

7. Contractor Information. Are any operational or maintenance aspects of this facility related to sewage sludge generation, treatment, use or disposal the responsibility of a contractor? X Yes ___No
   If yes, provide the following for each contractor (attach additional pages if necessary).
   Name: See Attached Contractor Information
   Mailing address:
   Street or P.O. Box: _____
   City or Town: _____ State: _____ Zip: _____
   Phone: ( ) _____
   Contractor's Federal, State or Local Permit Number(s) applicable to this facility's sewage sludge:
   _____
   If the contractor is responsible for the use and/or disposal of the sewage sludge, provide a description of the service to be provided to the applicant and the respective obligations of the applicant and the contractor(s).

8. Pollutant Concentrations. Using the table below or a separate attachment, provide sewage sludge monitoring data for the pollutants which limits in sewage sludge have been established in 9 VAC 25-31-10 et seq. for this facility's expected use or disposal practices. All data must be based on three or more samples taken at least one month apart and must be no more than four and one-half years old. Not Applicable

POLLUTANT	CONCENTRATION (mg/kg dry weight)	SAMPLE DATE	ANALYTICAL METHOD	DETECTION LEVEL FOR ANALYSIS
Arsenic				
Cadmium				
Chromium				
Copper				
Lead				
Mercury				
Molybdenum				
Nickel				
Selenium				
Zinc				

9. Certification. Read and submit the following certification statement with this application. Refer to the instructions to determine who is an officer for purposes of this certification. Indicate which parts of the application you have completed and are submitting:

   X Section A (General Information)
   X Section B (Generation of Sewage Sludge or Preparation of a Material Derived from Sewage Sludge)
   ___ Section C (Land Application of Bulk Sewage Sludge)
   ___ Section D (Surface Disposal)

FACILITY NAME: Totopotomoy Wastewater Treatment Plant **VPDES PERMIT NUMBER:** VA0089915

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and official title Cecil R. Harris, Jr., County Administrator

Signature Cecil R. Harris Date Signed 2/23/12

Telephone number (804) 365-6005

Upon request of the department, you must submit any other information necessary to assess sewage sludge use or disposal practices at your facility or identify appropriate permitting requirements.

FACILITY NAME: Totopotomoy Wastewater Treatment Plant **VPDES PERMIT NUMBER:** VA0089915

SECTION B. GENERATION OF SEWAGE SLUDGE OR PREPARATION OF A MATERIAL DERIVED FROM SEWAGE SLUDGE

Complete this section if your facility generates sewage sludge or derives a material from sewage sludge

1. Amount Generated On Site.
   Total dry metric tons per 365-day period generated at your facility: 324 dry metric tons

2. Amount Received from Off Site. If your facility receives sewage sludge from another facility for treatment, use or disposal, provide the following information for each facility from which sewage sludge is received. If you receive sewage sludge from more than one facility, attach additional pages as necessary.
   a. Facility name: None
   b. Contact Person: _____
      Title: _____
      Phone ( ) _____
   c. Mailing address:
      Street or P.O. Box: _____
      City or Town: _____ State: _____ Zip: _____
   d. Facility Address: _____
      (not P.O. Box) _____
   e. Total dry metric tons per 365-day period received from this facility: _____ dry metric tons
   f. Describe, on this form or on another sheet of paper, any treatment processes known to occur at the off-site facility, including blending activities and treatment to reduce pathogens or vector attraction characteristics:
      _____
      _____

3. Treatment Provided at Your Facility.
   a. Which class of pathogen reduction is achieved for the sewage sludge at your facility?
      ___Class A ___Class B X Neither or unknown
   b. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce pathogens in sewage sludge: See Attached Process Narrative
      _____
   c. Which vector attraction reduction option is met for the sewage sludge at your facility?
      ___ Option 1 (Minimum 38 percent reduction in volatile solids)
      ___ Option 2 (Anaerobic process, with bench-scale demonstration)
      ___ Option 3 (Aerobic process, with bench-scale demonstration)
      ___ Option 4 (Specific oxygen uptake rate for aerobically digested sludge)
      ___ Option 5 (Aerobic processes plus raised temperature)
      ___ Option 6 (Raise pH to 12 and retain at 11.5)
      ___ Option 7 (75 percent solids with no unstabilized solids)
      ___ Option 8 (90 percent solids with unstabilized solids)
      X None or unknown
   d. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce vector attraction properties of sewage sludge: See Attached Process Narrative
      _____
   e. Describe, on this form or another sheet of paper, any other sewage sludge treatment activities, including blending, not identified in a - d above: Not Applicable
      _____

4. Preparation of Sewage Sludge Meeting Ceiling and Pollutant Concentrations, Class A Pathogen Requirements and One of Vector Attraction Reduction Options 1-8 (EQ Sludge). Not Applicable
   (If sewage sludge from your facility does not meet all of these criteria, skip Question 4.)
   a. Total dry metric tons per 365-day period of sewage sludge subject to this section that is applied to the land: _____ dry metric tons
   b. Is sewage sludge subject to this section placed in bags or other containers for sale or give-away?

__Yes __No

5. Sale or Give-Away in a Bag or Other Container for Application to the Land. Not Applicable

(Complete this question if you place sewage sludge in a bag or other container for sale or give-away prior to land application. Skip this question if sewage sludge is covered in Question 4.)

a. Total dry metric tons per 365-day period of sewage sludge placed in a bag or other container at your facility for sale or give-away for application to the land:_____ dry metric tons

b. Attach, with this application, a copy of all labels or notices that accompany the sewage sludge being sold or given away in a bag or other container for application to the land.

6. Shipment Off Site for Treatment or Blending. Not Applicable

(Complete this question if sewage sludge from your facility is sent to another facility that provides treatment or blending. This question does not apply to sewage sludge sent directly to a land application or surface disposal site. Skip this question if the sewage sludge is covered in Questions 4 or 5. If you send sewage sludge to more than one facility, attach additional sheets as necessary.)

a. Receiving facility name:_____

b. Facility contact: _____
Title: _____
Phone: ( )_____

c. Mailing address:
Street or P.O. Box:_____
City or Town:_____ State:_____ Zip:_____

d. Total dry metric tons per 365-day period of sewage sludge provided to receiving facility: _____ dry metric tons

e. List, on this form or an attachment, the receiving facility's VPDES permit number as well as the numbers of all other federal, state or local permits that regulate the receiving facility's sewage sludge use or disposal practices:

Permit Number:	Type of Permit:
_____	_____
_____	_____

f. Does the receiving facility provide additional treatment to reduce pathogens in sewage sludge from your facility? ___Yes ___No
Which class of pathogen reduction is achieved for the sewage sludge at the receiving facility?
___Class A ___Class B ___Neither or unknown
Describe, on this form or another sheet of paper, any treatment processes used at the receiving facility to reduce pathogens in sewage sludge:_____
_____

g. Does the receiving facility provide additional treatment to reduce vector attraction characteristics of the sewage sludge? ___Yes ___No
Which vector attraction reduction option is met for the sewage sludge at the receiving facility?
___ Option 1 (Minimum 38 percent reduction in volatile solids)
___ Option 2 (Anaerobic process, with bench-scale demonstration)
___ Option 3 (Aerobic process, with bench-scale demonstration)
___ Option 4 (Specific oxygen uptake rate for aerobically digested sludge)
___ Option 5 (Aerobic processes plus raised temperature)
___ Option 6 (Raise pH to 12 and retain at 11.5)
___ Option 7 (75 percent solids with no unstabilized solids)
___ Option 8 (90 percent solids with unstabilized solids)
___ None unknown
Describe, on this form or another sheet of paper, any treatment processes used at the receiving facility to reduce vector attraction properties of sewage sludge:_____
_____

h. Does the receiving facility provide any additional treatment or blending not identified in f or g above?
___Yes ___No
If yes, describe, on this form or another sheet of paper, the treatment processes not identified in f or g above:
_____
_____

i. If you answered yes to f., g or h above, attach a copy of any information you provide to the receiving facility

to comply with the "notice and necessary information" requirement of 9 VAC 25-31-530.G.

j Does the receiving facility place sewage sludge from your facility in a bag or other container for sale or give-away for application to the land? ___Yes ___No
If yes, provide a copy of all labels or notices that accompany the product being sold or given away.

k. Will the sewage sludge be transported to the receiving facility in a truck-mounted watertight tank normally used for such purposes? ___ Yes ___ No. If no, provide description and specification on the vehicle used to transport the sewage sludge to the receiving facility.
Show the haul route(s) on a location map or briefly describe the haul route below and indicate the days of the week and the times of the day sewage sludge will be transported. _____
_____
_____

7. Land Application of Bulk Sewage Sludge. Not Applicable

(Complete Question 7.a if sewage sludge from your facility is applied to the land, unless the sewage sludge is covered in Questions 4, 5 or 6; complete Question 7.b, c & d only if you are responsible for land application of sewage sludge.)

a. Total dry metric tons per 365-day period of sewage sludge applied to all land application sites:_____dry metric tons

b. Do you identify all land application sites in Section C of this application? ___Yes ___No
If no, submit a copy of the Land Application Plan (LAP) with this application (LAP should be prepared in accordance with the instructions).

c. Are any land application sites located in States other than Virginia? ___Yes ___No
If yes, describe, on this form or on another sheet of paper, how you notify the permitting authority for the States where the land application sites are located. Provide a copy of the notification.
_____
_____

d. Attach a copy of any information you provide to the owner or lease holder of the land application sites to comply with the "notice and necessary" information requirement of 9 VAC 25-31-530 F and/or H (Examples may be obtained in Appendix IV).

8. Surface Disposal. Not Applicable

(Complete Question 8 if sewage sludge from your facility is placed on a surface disposal site.)

a. Total dry metric tons per 365-day period of sewage sludge from your facility placed on all surface disposal sites: _____ dry metric tons

b. Do you own or operate all surface disposal sites to which you send sewage sludge for disposal?
___Yes ___No
If no, answer questions c - g for each surface disposal site that you do not own or operate. If you send sewage sludge to more than one surface disposal site, attach additional pages as necessary.

c. Site name or number: _____

d. Contact person: _____
Title: _____
Phone: ( )_____
Contact is: ___Site Owner ___Site operator

e. Mailing address.
Street or P.O. Box:_____
City or Town:_____ State:_____ Zip:_____

f. Total dry metric tons per 365-day period of sewage sludge from your facility placed on this surface disposal site: _____ dry metric tons

g. List, on this form or an attachment, the surface disposal site VPDES permit number as well as the numbers of all other federal, state or local permits that regulate the sewage sludge use or disposal practices at the surface disposal site:

Permit Number:	Type of Permit:
_____	_____
_____	_____

9. Incineration. Not Applicable

(Complete Question 9 if sewage sludge from your facility is fired in a sewage sludge incinerator.)

a. Total dry metric tons per 365-day period of sewage sludge from your facility fired in a sewage sludge incinerator: _____ dry metric tons

b. Do you own or operate all sewage sludge incinerators in which sewage sludge from your facility is fired? ___Yes ___No
If no, answer questions c - g for each sewage sludge incinerator that you do not own or operate. If you send sewage sludge to more than one sewage sludge incinerator, attach additional pages as necessary.

c. Incinerator name or number: _____

d. Contact person: _____
Title: _____
Phone: ( ) _____
Contact is: ___Incinerator Owner ___Incinerator Operator

e. Mailing address.
Street or P.O. Box: _____
City or Town: _____ State: _____ Zip: _____

f. Total dry metric tons per 365-day period of sewage sludge from your facility fired in this sewage sludge incinerator: _____ dry metric tons

g. List on this form or an attachment the numbers of all other federal, state or local permits that regulate the firing of sewage sludge at this incinerator:

Permit Number:	Type of Permit:

10. Disposal in a Municipal Solid Waste Landfill.

(Complete Question 10 if sewage sludge from your facility is placed on a municipal solid waste landfill. Provide the following information for each municipal solid waste landfill on which sewage sludge from your facility is placed. If sewage sludge is placed on more than one municipal solid waste landfill, attach additional pages as necessary.)

a. Landfill name: Virginia Waste Services (Shoosmith Bros. Landfill)

b. Contact person: Bruce Coble
Title: Manager, Landfill Operations
Phone: ( ) (804) 748-5823
Contact is: ___Landfill Owner X Landfill Operator

c. Mailing address.
Street or P.O. Box: 11800 Lewis Road
City or Town: Chester State: VA Zip: 23831

d. Landfill location.
Street or Route #: Same As Above
County: _____
City or Town: _____ State: _____ Zip: _____

e. Total dry metric tons per 365-day period of sewage sludge placed in this municipal solid waste landfill: 324 dry metric tons

f. List, on this form or an attachment, the numbers of all federal, state or local permits that regulate the operation of this municipal solid waste landfill:

Permit Number:	Type of Permit:
VADEQ #587	Solid Waste Permit

g. Does sewage sludge meet applicable requirements in the Virginia Solid Waste Management Regulation, 9 VAC 20-80-10 et seq., concerning the quality of materials disposed in a municipal solid waste landfill? X Yes ___No

h. Does the municipal solid waste landfill comply with all applicable criteria set forth in the Virginia Solid Waste Management Regulation, 9 VAC 20-80-10 et seq.? X Yes ___No

i. Will the vehicle bed or other container used to transport sewage sludge to the municipal solid waste landfill be watertight and covered? X Yes ___ No
Show the haul route(s) on a location map or briefly describe the route below and indicate the days of the week and time of the day sewage sludge will be transported. See Attachment 3

FACILITY NAME: Totopotomoy Wastewater Treatment Plant **VPDES PERMIT NUMBER:** VA0089915

SECTION C. LAND APPLICATION OF BULK SEWAGE SLUDGE

Not Applicable

Complete this section for sewage sludge that is land applied unless any of the following conditions apply:

The sewage sludge meets the Table 1 ceiling concentrations, the Table 3 pollutant concentrations, Class A pathogen requirements and one of the vector attraction reduction options 1-8 (fill out B.4 instead) (EQ Sludge); or

The sewage sludge is sold or given away in a bag or other container for application to the land (fill out B.5 instead); or

You provide the sewage sludge to another facility for treatment or blending (fill out B.6 instead).

Complete Section C for every site on which the sewage sludge that you reported in B.7 is land applied.

1. Identification of Land Application Site.
   a. Site name or number: _____
   b. Site location (Complete i and ii)
      i. Street or Route#: _____
      County: _____
      City or Town: _____ State: _____ Zip: _____
      ii. Latitude:_____ Longitude:_____
      Method of latitude/longitude determination
      _____ USGS map _____ Filed survey _____ Other
   c. Topographic map. Provide a topographic map (or other appropriate map if a topographic map is unavailable) that shows the site location.

2. Owner Information.
   a. Are you the owner of this land application site? ___Yes ___No
   b. If no, provide the following information about the owner:
      Name: _____
      Street or P.O. Box:_____
      City or Town: _____ State:_____ Zip:_____
      Phone: ( )_____

3. Applier Information:
   a. Are you the person who applies, or who is responsible for application of, sewage sludge to this land application site? ___Yes ___No
   b. If no, provide the following information for the person who applies the sewage sludge:
      Name: _____
      Street or P.O. Box:_____
      City or Town:_____ State:_____ Zip:_____
      Phone: ( )_____
   c. List, on this form or an attachment, the numbers of all federal, state or local permits that regulate the person who applies sewage sludge to this land application site:

Permit Number:	Type of Permit:
_____	_____
_____	_____

4. Site Type. Identify the type of land application site from among the following:
   ___Agricultural land ___Reclamation site ___Forest
   ___Public contact site ___Other. Describe _____

5. Vector Attraction Reduction.
   Are any vector attraction reduction requirements met when sewage sludge is applied to the land application site?
   ____Yes ____No If yes, answer a and b.
   a. Indicate which vector attraction reduction option is met:
      ___ Option 9 (Injection below land surface)
      ___ Option 10 (Incorporation into soil within 6 hours)
   b. Describe, on this form or on another sheet of paper, any treatment processes used at the land application site to reduce the vector attraction properties of sewage sludge:
      _____
      _____

6. Cumulative Loadings and Remaining Allotments.

(Complete Question 6 only if the sewage sludge applied to this site since July 20, 1993 is subject to the cumulative pollutant loading rates (CPLRs) - see instructions.)

a. Have you contacted DEQ or the permitting authority in the state where the sewage sludge subject to the CPLRs will be applied to ascertain whether bulk sewage sludge subject to the CPLRs has been applied to this site since July 20, 1993? ___Yes ___No
If no, sewage sludge subject to the CPLRs may not be applied to this site.
If yes, provide the following information:
Permitting authority: _____
Contact person:_____
Phone:( )_____

b. Based upon this inquiry, has bulk sewage sludge subject to the CPLRs been applied to this site since July 20, 1993? ___Yes ___No If no, skip the rest of Question 6. If yes, answer questions c - e.

c. Site size, in hectares: _____ (one hectare = 2.471 acres)

d. Provide the following information for every facility other than yours that is sending or has sent sewage sludge subject to the CPLRs to this site since July 20, 1993. If more than one such facility sends sewage sludge to this site, attach additional pages as necessary.
Facility name:_____
Facility contact: _____
Title: _____
Phone: ( )_____
Mailing address.
Street or P.O. Box:_____
City or Town:_____ State:_____ Zip:_____

e. Provide the total loading and allotment remaining, in kg/hectare, for each of the following pollutants:

	Cumulative loading	Allotment remaining
Arsenic	_____	_____
Cadmium	_____	_____
Copper	_____	_____
Lead	_____	_____
Mercury	_____	_____
Nickel	_____	_____
Selenium	_____	_____
Zinc	_____	_____

Complete Questions 7-12 below only if you apply sewage sludge, or you are responsible for land application of sewage sludge. Information required by these questions may be prepared as attachments to this form. Skip the following questions if you contract land application to someone else (as indicated under Section A.7) who is responsible for the operation.

7. Sludge Characterization. Use the table below or a separate attachment, provide at least one analysis for each parameter.

PCBs (mg/kg)	_____
pH (S. U.)	_____
Percent Solids (%)	_____
Ammonium Nitrogen (mg/kg)	_____
Nitrate Nitrogen (mg/kg)	_____
Total Kjeldahl Nitrogen (mg/kg)	_____
Total Phosphorus (mg/kg)	_____
Total Potassium (mg/kg)	_____
Alkalinity as $CaCO_3$* (mg/kg)	_____

* Lime treated sludge (10% or more lime by dry weight) should be analyzed for percent $CaCO_3$.

8. Storage Requirements.

Existing and proposed sludge storage facilities must provide an estimated annual sludge balance on a monthly basis incorporating such factors as storage capacity, sludge production and land application schedule. Include pertinent calculations justifying storage requirements.

Proposed sludge storage facilities must also provide the following information:

a. A sludge storage site layout on a 7.5 minute topographic quadrangle or other appropriate scaled map to show the following topographic features of the surrounding landscape to a distance of 0.25 mile. Clearly mark the property line.
   1) Water wells, abandoned or operating
   2) Surface waters
   3) Springs
   4) Public water supply(s)
   5) Sinkholes
   6) Underground and/or surface mines
   7) Mine pool (or other) surface water discharge points
   8) Mining spoil piles and mine dumps
   9) Quarry(s)
   10) Sand and gravel pits
   11) Gas and oil wells
   12) Diversion ditch(s)
   13) Agricultural drainage ditch(s)
   14) Occupied dwellings, including industrial and commercial establishments
   15) Landfills or dumps
   16) Other unlined impoundments
   17) Septic tanks and drainfields
   18) Injection wells
   19) Rock outcrops

b. A topographic map of sufficient detail to clearly show the following information:
   1) Maximum and minimum percent slopes
   2) Depressions on the site that may collect water
   3) Drainageways that may attribute to rainfall run-on to or runoff from this site
   4) Portions of the site (if any) which are located with the 100-year floodplain and how the storage facility will be protected from flooding

c. Data and specifications for the storage facility lining material.

d. Plan and cross-sectional views of the storage facility.

e. Depth from the bottom of the storage facility to the seasonal high water table and separation distance to the permanent water table.

9. Land Area Requirements. Provide calculations justifying the land area requirements for land application of sewage sludge taking into consideration average soil productivity group, crop(s) to be grown and most limiting factor(s) of the sewage sludge, specifically Plant Available Nitrogen (PAN), Calcium Carbonate Equivalence (CCE), and metal loadings (CPLR sewage sludge only), where applicable. Relate PAN, CCE, and metal loadings to demonstrate the most limiting factor for land application.

10. Landowner Agreement Forms. Provide a properly completed Sewage Sludge Application Agreement Form (attached) for each landowner if sewage sludge is to be applied onto land not owned by the applicant.

11. Ground Water Monitoring.

Are any ground water monitoring data available for this land application site? ___Yes ___No

If yes, submit the ground water monitoring data with this permit application. Also submit a written description of the well locations, approximate depth to ground water, and the ground water monitoring procedures used to obtain these data.

12. Land Application Site Information.

(Complete Items a-d for sites receiving infrequent application - land application of sewage sludge up to the agronomic rate at a frequency of once in a 3 year period; complete Items a-h for sites receiving frequent application - land application of sewage sludge in excess of 70% the agronomic rate at a frequency greater than once in a 3 year period)

a. Provide a general location map for each county which clearly indicates the location of all the land application sites.

b. For each land application site provide a site plan of sufficient detail to clearly show the concerned landscape features and associated buffer zones (See instructions). Provide a legend for each landscape feature and the net acreage for each field taking into account the proposed buffer zones.

c. In order to ensure that land application of bulk sewage sludge will not impact federally listed threatened or endangered species or federally designated critical habitat, the applicant must notify the field office of the U. S. Department of the Interior, Fish and Wildlife Service (FWS), by a letter, the proposed land application activities with the identification of the land application sites. The address and phone number of FWS are provided below.

U. S. Fish and Wildlife Service
Ecological Services
6669 Short Lane
Gloucester, VA 23061
TEL: (804) 693-6694

Provide a copy of the notification letter with this application form.

d. Provide a soil survey map, preferably photographically based, with the field boundaries clearly marked. (A USDA-SCS soil survey map should be provided, if available.)
Provide a detailed legend for each soil survey map which uses accepted USDA-SCS descriptions of the typifying pedon for each soil series (soil type). Complex associations may be described as a range of characteristics. Soil descriptions shall include as a minimum the following information.

1) Soil symbol
2) Soil series, textural phase and slope range
3) Depth to seasonal high water table
4) Depth to bedrock
5) Estimated soil productivity group (for the proposed crop rotation)

Item e - h are required for sites receiving frequent application of sewage sludge

e. In order to verify the information provided in item d, characterize the soil at each land application site. Representative soil borings or test pits to a depth of five feet or to bedrock if shallower, are to be coordinated for the typifying pedon of each soil series (soil type). Soil descriptions shall include as a minimum the following information:

1). Soil symbol
2). Soil series, textural phase and slope range
3). Depth to seasonal high water table
4). Depth to bedrock
5). Estimated soil productivity group (for the proposed crop rotation)

f. Collect and analyze soil samples from each field, weighted to best represent each of the soil borings performed for Item e. Using the table below or a separate attachment, provide at least one analysis per sample for each of the following parameters.

Soil Organic Matter (%)	_____
Soil pH (std. units)	_____
Cation Exchange Capacity (meq/100g)	_____
Total Nitrogen (ppm)	_____
Organic Nitrogen (ppm)	_____
Ammonia Nitrogen (ppm)	_____
Nitrate Nitrogen (ppm)	_____
Available Phosphorus (ppm)	_____
Exchangeable Potassium (mg/100g)	_____
Exchangeable Sodium (mg/100g)	_____
Exchangeable Calcium (mg/100g)	_____
Exchangeable Magnesium (mg/100g)	_____
Arsenic (ppm)	_____
Cadmium (ppm)	_____
Copper (ppm)	_____
Lead (ppm)	_____
Mercury (ppm)	_____
Molybdenum (ppm)	_____
Nickel (ppm)	_____
Selenium (ppm)	_____
Zinc (ppm)	_____
Manganese (ppm)	_____
Particle Size Analysis or USDA Textural Estimate (%)	_____

g. Relate the crop nutrient needs to anticipated yields, soil productivity rating and the various fertilizer or nutrient sources from sludge and chemical fertilizers. Describe any specialized agronomic management practices which may be required as a result of high soil pH. If the sludge is expected to possess an unusually high CCE or other unusual properties, provide a description of any plant tissue testing, supplemental fertilization or intensive agronomic management practices which may be necessary.

h. Using a narrative format and referencing any related charts, describe the proposed cropping system. Show how the crop rotation and management will be coordinated with the design of the land application system. Include any supplemental fertilization program, soil testing and the coordination of tillage practices, planting and harvesting schedules and timing of land application.

FACILITY NAME: Totopotomoy Wastewater Treatment Plant **VPDES PERMIT NUMBER:** VA0089915

SEWAGE SLUDGE APPLICATION AGREEMENT

This sewage sludge application agreement is made on this date _____ between _____, referred to here as "landowner", and _____, referred to here as the "Permittee".

Landowner is the owner of agricultural land shown on the map attached as Exhibit A and designated there as _____ ("landowner's land"). Permittee agrees to apply and landowner agrees to comply with certain permit requirements following application of sewage sludge on landowner's land in amounts and in a manner authorized by VPDES permit number _____ which is held by the Permittee.

Landowner acknowledges that the appropriate application of sewage sludge will be beneficial in providing fertilizer and soil conditioning to the property. Moreover, landowner acknowledges having been expressly advised that, in order to protect public health, the following site restrictions must be adhered to when sewage sludge receives Class B treatment for pathogen reduction:

1. Food crops with harvested parts that touch the sewage sludge/soil mixture and are totally above the land surface shall not be harvested for 14 months after application of sewage sludge;

2. Food crops with harvested parts below the surface of the land shall not be harvested for 20 months after application of sewage sludge when the sewage sludge remains on the land surface for four months or longer prior to incorporation into the soil;

3. Food crops with harvested parts below the surface of the land shall not be harvested for 38 months after application of sewage sludge when the sewage sludge remains on the land surface for less than four months prior to incorporation into the soil;

4. Food crops, feed crops, and fiber crops shall not be harvested for 30 days after application of sewage sludge;

5. Animals shall not be grazed on the land for 30 days after application of sewage sludge;

6. Turf grown on land where sewage sludge is applied shall not be harvested for one year after application of the sewage sludge when the harvested turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by the State Water Control Board;

7. Public access to land with a high potential for public exposure shall be restricted for one year after application of sewage sludge;

8. Public access to land with a low potential for public exposure shall be restricted for 30 days after application of sewage sludge.

9. Tobacco, because it has been shown to accumulate cadmium, should not be grown on landowner's land for three years following the application of sewage sludge borne cadmium equal to or exceeding 0.5 kilograms/hectare (0.45 pounds/acre).

Permittee agrees to notify landowner or landowner's designee of the proposed schedule for sewage sludge application and specifically prior to any particular application to landowner's land. This agreement may be terminated by either party upon written notice to the address specified below.

Landowner:	Permittee:
_____	_____
Signature	Signature
_____	_____
Mailing Address	Mailing Address

FACILITY NAME: Totopotomoy Wastewater Treatment Plant **VPDES PERMIT NUMBER:** VA0089915

SECTION D. SURFACE DISPOSAL

Not Applicable

Complete this section only if you own or operate a surface disposal site. Provide the information for each active sewage sludge unit.

1. Information on Active Sewage Sludge Units.
   a. Unit name or number: _____
   b. Unit location
      i. Street or Route#: _____
      County: _____
      City or Town: _____ State: _____ Zip: _____
      ii. Latitude:_____ Longitude:_____
      Method of latitude/longitude determination
      _____ USGS map _____ Filed survey _____ Other
   c. Topographic map. Provide a topographic map (or other appropriate map if a topographic map is unavailable) that shows the site location.
   d. Total dry metric tons of sewage sludge placed on the active sewage sludge unit per 365-day period: _____dry metric tons.
   e. Total dry metric tons of sewage sludge placed on the active sewage sludge unit over the life of the unit: _____ dry metric tons.
   f. Does the active sewage sludge unit have a liner with a minimum hydraulic conductivity of 1×10^{-7} cm/sec? ___Yes ___No If yes, describe the liner or attach a description.
   _____
   _____
   g. Does the active sewage sludge unit have a leachate collection system? ___Yes ___No
   If yes, describe the leachate collection system or attach a description. Also, describe the method used for leachate disposal and provide the numbers of any federal, state or local permits for leachate disposal:
   _____
   _____
   _____
   h. If you answered no to either f or g, answer the following:
   Is the boundary of the active sewage sludge unit less than 150 meters from the property line of the surface disposal site? ___Yes ___No If yes, provide the actual distance in meters:_____
   i. Remaining capacity of active sewage sludge unit, in dry metric tons:_____ dry metric tons
   Anticipated closure date for active sewage sludge unit, if known:_____ (MM/DD/YYYY)
   Provide with this application a copy of any closure plan developed for this active sewage sludge unit.

2. Sewage Sludge from Other Facilities.
   Is sewage sludge sent to this active sewage sludge unit from any facilities other than yours? ___Yes ___No
   If yes, provide the following information for each such facility, attach additional sheets as necessary.
   a. Facility name:_____
   b. Facility contact: _____
   Title: _____
   Phone: ( )_____
   c. Mailing address.
   Street or P.O. Box:_____
   City or Town:_____ State:_____ Zip:_____
   d. List, on this form or an attachment, the facility's VPDES permit number as well as the numbers of all other federal, state or local permits that regulate the facility's sewage sludge management practices:

Permit Number:	Type of Permit:
_____	_____
_____	_____

   e. Which class of pathogen reduction is achieved before sewage sludge leaves the other facility?
   ___Class A ___Class B ___Neither or unknown
   f. Describe, on this form or on another sheet of paper, any treatment processes used at the other facility to reduce pathogens in sewage sludge:_____
   _____
   _____

g. Which vector attraction reduction option is achieved before sewage sludge leaves the other facility?
___ Option 1 (Minimum 38 percent reduction in volatile solids)
___ Option 2 (Anaerobic process, with bench-scale demonstration)
___ Option 3 (Aerobic process, with bench-scale demonstration)
___ Option 4 (Specific oxygen uptake rate for aerobically digested sludge)
___ Option 5 (Aerobic processes plus raised temperature)
___ Option 6 (Raise pH to 12 and retain at 11.5)
___ Option 7 (75 percent solids with no unstabilized solids)
___ Option 8 (90 percent solids with unstabilized solids)
___ None or unknown

h. Describe, on this form or another sheet of paper, any treatment processes used at the other facility to reduce vector attraction properties of sewage sludge:_____
_____
_____

i. Describe, on this form or another sheet of paper, any other sewage sludge treatment activities performed by the other facility that are not identified in e - h above:_____
_____
_____

3. Vector Attraction Reduction.

a. Which vector attraction reduction option, if any, is met when sewage sludge is placed on this active sewage sludge unit?
___ Option 9 (Injection below land surface)
___ Option 10 (Incorporation into soil within 6 hours)
___ Option 11 (Covering active sewage sludge unit daily)

b. Describe, on this form or another sheet of paper, any treatment processes used at the active sewage sludge unit to reduce vector attraction properties of sewage sludge: _____
_____
_____

4. Ground Water Monitoring.

a. Is ground water monitoring currently conducted at this active sewage sludge unit or are ground water monitoring data otherwise available for this active sewage sludge unit? ___Yes ___No
If yes, provide a copy of available ground water monitoring data. Also provide a written description of the well locations, the approximate depth to ground water, and the ground water monitoring procedures used to obtain these data.

b. Has a ground water monitoring program been prepared for this active sewage sludge unit?
___Yes ___No If yes, submit a copy of the ground water monitoring program with this application.

c. Have you obtained a certification from a qualified ground water scientist that the aquifer below the active sewage sludge unit has not been contaminated? ___Yes ___No
If yes, submit a copy of the certification with this application.

5. Site-Specific Limits.
Are you seeking site-specific pollutant limits for the sewage sludge placed on the active sewage sludge unit?
___Yes ___No If yes, submit information to support the request for site-specific pollutant limits with this application.

Totopotomoy Wastewater Treatment Plant (TWWTP)
VA0089915

Sludge Application Narrative and Contractor Information

The solids handling facilities at the Totopotomoy WWTP are designed to thicken, stabilize, and dewater solids generated during the liquid treatment process prior to final disposal.

The solids handling facilities consist of:

- Two waste activated sludge (WAS) pumps
- Two aerobic digesters
- One gravity belt thickener (GBT)
- One thickened waste activated sludge (TWAS) pump
- Two belt filter press feed pumps
- One belt filter press (BFP)
- Two sludge truck/dumpster loading stations.

The WAS pumps draw waste activated sludge from the RAS Pump Station discharge piping and direct flow to either the GBT or directly to the aerobic digesters. Waste activated sludge is stabilized in the aerobic digesters prior to dewatering. For landfill disposal, the digested solids are pumped to the BFP for dewatering, and the dewatered cake is deposited in a dumpster for hauling to an approved landfill.

Virginia Waste Services operates a municipal solid waste landfill (Shoosmith Bros. Landfill) in Chester Virginia and is the current contracted vendor for the facilities biosolids disposal. The landfill is located at 11800 Lewis Road, Chester, VA 23831 at the intersection of Route 10 and Lewis Road.

Biosolids are transported to the landfill by Container First Services (CFS) LLC under a separate contract. Container First Services is located at 13140 Parkers Battery Road, Chester VA 23836. The hauling route from the TWWTP to the landfill generally follows the major roads in the Richmond metro area. The trucks leave the plant, drive west on Pole Green Road to I-295. Follow I-295 south to Route 10 in Chester and drive west on Route 10 to the landfill.

VPDES Permit Application Addendum

1. Entity to whom the permit is to be issued: Hanover County
Who will be legally responsible for the wastewater treatment facilities and compliance with the permit? This may or may not be the facility or property owner.

2. Is this facility located within city or town boundaries? Y / (N)

3. What is the tax map parcel number for the land where this facility is located? 8726-62-7679

4. For the facility to be covered by this permit, how many acres will be disturbed during the next five years due to new construction activities? None

5. ALL FACILITIES: What is the design average flow of this facility? 7.0 MGD
Industrial facilities: What is the max. 30-day avg. production level (include units)? _____

In addition to the above design flow or production level, should the permit be written with limits for any other discharge flow tiers or production levels? (Y) / N

If AYes≅, please specify the other flow tiers (in MGD) or production levels:
10.0
Please consider: Is your facility=s design flow considerably greater than your current flow? Do you plan to expand operations during the next five years?

6. Nature of operations generating wastewater:
Municipal wastewater treatment

100 % of flow from domestic connections/sources
Number of private residences to be served by the wastewater treatment facilities: __ 0 __ 1-49 X 50 or more

____% of flow from non-domestic connections/sources

7. Mode of discharge: X Continuous __Intermittent __Seasonal
Describe frequency and duration of intermittent or seasonal discharges:

8. Identify the characteristics of the receiving stream at the point just above the facility=s discharge point:
__ Permanent stream, never dry
__ Intermittent stream, usually flowing, sometimes dry
__ Ephemeral stream, wet-weather flow, often dry
__ Effluent-dependent stream, usually or always dry
__ Lake or pond at or below the discharge point
X Other: Tidal River

9. Approval Date(s):
O & M Manual September 2010 Sludge/Solids Management Plan September 2004

Have there been any changes in your operations or procedures since the above approval dates? Y (N)

HRSD
Cleaning wastewater every day for a better Bay.

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

04/13/11 - Hanover County - Totopotomoy Permit Application

This analytical report contains 14 pages

Matt Ellinghaus
Hanover County
Department of Public Utilities
P.O. Box 470
Hanover, VA 23069

mbellinghaus@co.hanover.va.us

cc: Regina Andrepont Cuthbert

racuthbert@co.hanover.va.us

Date Sent: 05/06/11

HRSD CEL, Central Environmental Laboratory is VELAP/NELAC accredited by DCLS, the Division of Consolidated Laboratory Services.

VA Laboratory ID#: 460011
Effective Date: June 15, 2010
Expiration Date: June 14, 2011
Certificate # 643

Analytical test results meet all requirements of VELAP/NELAC unless otherwise noted under the analysis.

Test results relate only to the sample tested. Clients should be aware that a critical step in chemical or microbiological analysis is the collection of the sample.

If you have any questions concerning this report, please do not hesitate to call Danny Barker, TSD Environmental Scientist at (757) 460-4247, Robin Parnell, CEL Laboratory Manager at (757) 460-4203 or Cindi Reno, CEL Administrative Assistant at (757) 460-4205.

HRSD
Cleaning wastewater every day for a better Bay.

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project: Hanover County - Totopotomoy WWTP
Customer Sample ID: Field Blank
Project Code: HAN_TO
Sample Point: FB
Sample Date: 04/13/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Total Metals							
Chromium	EPA 200.8	ug/L	<5.0	5.0	KWILLI	04/26/11	16:39
Dissolved Metals							
Antimony	EPA 200.8	ug/L	<20.0	20.0	KWILLI	04/26/11	16:45
Arsenic	EPA 200.8	ug/L	<20.0	20.0	KWILLI	04/26/11	16:45
Beryllium	EPA 200.8	ug/L	<1.0	1.0	KWILLI	04/26/11	16:45
Cadmium	EPA 200.8	ug/L	<0.1	0.1	KWILLI	04/26/11	16:45
Chromium III (measured as Total Chromium)		ug/L	<5.0	5.0	KWILLI	04/26/11	16:39
Chromium VI (measured as Total Chromium)		ug/L	<5.0	5.0	KWILLI	04/26/11	16:39
Copper	EPA 200.8	ug/L	<1.0	1.0	KWILLI	04/26/11	16:45
Lead	EPA 200.8	ug/L	<1.0	1.0	KWILLI	04/26/11	16:45
Mercury	EPA 245.1	ug/L	<0.20	0.20	SLABOC	04/20/11	10:05
Nickel	EPA 200.8	ug/L	<2.0	2.0	KWILLI	04/26/11	16:45
Selenium	EPA 200.8	ug/L	<2.0	2.0	KWILLI	04/26/11	16:45
Silver	EPA 200.8	ug/L	<0.10	0.10	KWILLI	04/26/11	16:45
Thallium	EPA 200.8	ug/L	<0.10	0.10	KWILLI	04/26/11	16:45
Zinc	EPA 200.8	ug/L	<10.0	10.0	KWILLI	04/26/11	16:45

Notes:
[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

HRSD
Cleaning wastewater every day for a better Bay.
1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project: Hanover County - Totopotomoy WWTP
Customer Sample ID: Field Blank
Project Code: HAN_TO
Sample Point: FB
Sample Date: 04/13/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Volatile Organics							
Acrolein	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
Acrylonitrile	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
Benzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
Bromoform	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
Carbon Tetrachloride	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
Chlorobenzene (Monochlorobenzene)	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
Chlorodibromomethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
Chloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
2-Chloro-ethylvinyl Ether	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
Chloroform	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
Dichlorobromomethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
1,2 Dichlorobenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
1,3 Dichlorobenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
1,4 Dichlorobenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
1,1-Dichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
1,2-Dichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
1,1-Dichloroethylene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
1,2-trans-Dichloroethylene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
1,2-Dichloropropane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
1,3 Dichloropropylene (1,3-Dichloropropene)[2]	EPA 624	ug/L	<20.0	20.0	SLOPEZ	04/15/11	17:58
Ethylbenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
Methyl Bromide	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
Methyl Chloride	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
Methylene Chloride (Dichloromethane)	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
1,1,2,2-Tetrachloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
Tetrachloroethylene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
Toluene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
1,1,1-Trichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
1,1,2-Trichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
Trichloroethylene (Trichloroethene)	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58
Vinyl Chloride	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	17:58

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

[2] *1,3-Dichloropropylene is the total of cis-1,3-Dichloropropylene and trans-1,3-Dichloropropylene.*

HRSD
Cleaning wastewater every day for a better Bay.

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project:	**Hanover County - Totopotomoy WWTP**
Customer Sample ID:	**Field Blank**
Project Code:	**HAN_TO**
Sample Point:	**FB**
Sample Date:	**04/13/11**

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Semi-Volatile Organics-Acid Extractables							
p-Chloro-m-cresol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
2-Chlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
2,4 Dichlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
2,4 Dimethylphenol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
4,6-Dinitro-o-cresol (2-Methyl-4,6-dinitrophenol)	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
2,4-Dinitrophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
2-Nitrophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
4-Nitrophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Pentachlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Phenol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
2,4,6 Trichlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Semi-Volatile Organics - Base Neutral Extractables							
Acenaphthene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Acenapthylene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Anthracene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Benzidine	EPA 625	ug/L	<10.0	10.0	IGERAS	04/30/11	18:12
Benzo(a)anthracene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Benzo(a)pyrene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Benzo(b)fluoranthene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Benzo(k)fluoranthene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Benzo(GHI)Perylene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Bis-(2-chloroethyl)-Ether	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Bis-(2-Chloroethoxy) Methane	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Bis-2-(Chloroisopropyl) Ether	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Bis-2-ethyl hexyl phthalate (Di-2-Ethylhexyl Phthlate)	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
4-Bromophenyl Phenyl Ether	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Butyl benzyl phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
2-Chloronaphthalene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
4-Chlorophenyl phenyl ether	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Chrysene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Dibenzo(a,h) anthracene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Dibutyl phthalate (Di-n-butyl phthalate)	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Di-n-octyl phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

Cleaning wastewater every day for a better Bay.

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project: Hanover County - Totopotomoy WWTP
Customer Sample ID: Field Blank
Project Code: HAN_TO
Sample Point: FB
Sample Date: 04/13/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
3,3-Dichlorobenzidine	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Diethyl phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Dimethyl Phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
2,4-Dinitrotoluene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
2,6-Dinitrotoluene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
1,2-Diphenylhydrazine[2,Δ]	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Fluoranthene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Fluorene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Hexachlorobenzene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Hexachlorobutadiene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Hexachlorocyclopentadiene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Hexachloroethane	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Indeno(1,2,3-cd)pyrene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Isophorone	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Naphthalene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Nitrobenzene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
N-Nitrosodi-n-propyl amine	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
N-Nitrosodimethylamine	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
N-Nitrosodiphenylamine[3]	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Phenanthrene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
Pyrene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34
1,2,4 Trichlorobenzene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	01:34

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

[2] *1,2-Diphenylhydrazine gets converted to Azobenzene in the extraction process.*

[3] *N-Nitrosodiphenylamine decomposes in the injection port to Diphenylamine.*

[Δ] *Parameter is not included in HRSD CEL VELAP scope of accreditation.*

HRSD
Cleaning wastewater every day for a better Bay.
1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project: Hanover County - Totopotomoy WWTP
Customer Sample ID: Field Blank
Project Code: HAN_TO
Sample Point: FB
Sample Date: 04/13/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Pesticides & PCB's							
alpha-BHC (Hexachlorocyclohexane)	EPA 608	ug/L	<0.05	0.05	CCURRY	04/19/11	16:43
beta-BHC (Hexachlorocyclohexane)	EPA 608	ug/L	<0.05	0.05	CCURRY	04/19/11	16:43
DDD	EPA 608	ug/L	<0.05	0.05	CCURRY	04/19/11	16:43
DDE	EPA 608	ug/L	<0.05	0.05	CCURRY	04/19/11	16:43
Dieldrin	EPA 608	ug/L	<0.05	0.05	CCURRY	04/19/11	16:43
Endrin aldehyde	EPA 608	ug/L	<0.05	0.05	CCURRY	04/19/11	16:43
Heptachlor epoxide	EPA 608	ug/L	<0.05	0.05	CCURRY	04/19/11	16:43
Kepone	EPA 608	ug/L	<0.10	0.10	CCURRY	04/20/11	07:55
PCB 1016	EPA 608	ug/L	<1.00	1.00	CCURRY	04/19/11	22:35
PCB 1221	EPA 608	ug/L	<1.00	1.00	CCURRY	04/19/11	22:35
PCB 1232	EPA 608	ug/L	<1.00	1.00	CCURRY	04/19/11	22:35
PCB 1242	EPA 608	ug/L	<1.00	1.00	CCURRY	04/19/11	22:35
PCB 1248	EPA 608	ug/L	<1.00	1.00	CCURRY	04/19/11	22:35
PCB 1254	EPA 608	ug/L	<1.00	1.00	CCURRY	04/19/11	22:35
PCB 1260	EPA 608	ug/L	<1.00	1.00	CCURRY	04/19/11	22:35
PCB Total	EPA 608	ug/L	<7.00	7.00	CCURRY	04/19/11	22:35

Notes:
[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

Authorization: _____ **Date:** 05.05.11
Lab Manager / QA Manager

HRSD
Cleaning wastewater every day for a better Bay.

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project: Hanover County - Totopotomoy WWTP
Customer Sample ID: Final Effluent
Project Code: HAN_TO
Sample Point: FNE
Sample Date: 04/13/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Miscellaneous Parameters							
Cyanide	EPA 335.4	ug/L	<10	10	JRICKS	04/22/11	13:38
Sulfide (Hydrogen sulfide)	ASTM D 4658-03	mg/L	<0.1	0.1	JRICKS	04/15/11	12:30
Oil and Grease HEM	EPA 1664A	mg/L	<5.0	5.0	JRICKS	04/21/11	07:50
Total Dissolved Solids	SM 2540C	mg/L	436	1	RCASTR	04/14/11	18:00
Total Phenol	EPA 420.4	mg/L	<0.05	0.05	JRICKS	04/22/11	09:43
Hardness (as $CaCO_3$)	SM2340B	mg eq $CaCO_3$/L	78.4	0.20	SWILLI	04/19/11	13:50
Total Metals							
Chromium	EPA 200.8	ug/L	<5.0	5.0	KWILLI	04/26/11	16:51
Dissolved Metals							
Antimony	EPA 200.8	ug/L	<20.0	20.0	KWILLI	04/26/11	17:28
Arsenic	EPA 200.8	ug/L	<20.0	20.0	KWILLI	04/26/11	17:28
Beryllium	EPA 200.8	ug/L	<1.0	1.0	KWILLI	04/26/11	17:28
Cadmium	EPA 200.8	ug/L	<0.1	0.1	KWILLI	04/26/11	17:28
Chromium III (measured as Total Chromium)		ug/L	<5.0	5.0	KWILLI	04/26/11	16:51
Chromium VI (measured as Total Chromium)		ug/L	<5.0	5.0	KWILLI	04/26/11	16:51
Copper	EPA 200.8	ug/L	1.1	1.0	KWILLI	04/26/11	17:28
Lead	EPA 200.8	ug/L	<1.0	1.0	KWILLI	04/26/11	17:28
Mercury	EPA 245.1	ug/L	<0.20	0.20	SLABOC	04/20/11	10:08
Nickel	EPA 200.8	ug/L	<2.0	2.0	KWILLI	04/26/11	17:28
Selenium	EPA 200.8	ug/L	<2.0	2.0	KWILLI	04/26/11	17:28
Silver	EPA 200.8	ug/L	<0.10	0.10	KWILLI	04/26/11	17:28
Thallium	EPA 200.8	ug/L	<0.10	0.10	KWILLI	04/26/11	17:28
Zinc	EPA 200.8	ug/L	36.7	10.0	KWILLI	04/26/11	17:28

Notes:
[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

HRSD
Cleaning wastewater every day for a better Bay.

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project: Hanover County - Totopotomoy WWTP
Customer Sample ID: Final Effluent
Project Code: HAN_TO
Sample Point: FNE
Sample Date: 04/13/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Volatile Organics							
Acrolein	EPA 624	ug/L	<50.0	50.0	SLOPEZ	04/15/11	21:27
Acrylonitrile	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
Benzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
Bromoform	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
Carbon Tetrachloride	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
Chlorobenzene (Monochlorobenzene)	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
Chlorodibromomethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
Chloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
2-Chloro-ethylvinyl Ether	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
Chloroform	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
Dichlorobromomethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
1,2 Dichlorobenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
1,3 Dichlorobenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
1,4 Dichlorobenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
1,1-Dichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
1,2-Dichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
1,1-Dichloroethylene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
1,2-trans-Dichloroethylene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
1,2-Dichloropropane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
1,3 Dichloropropylene (1,3-Dichloropropene)[2]	EPA 624	ug/L	<20.0	20.0	SLOPEZ	04/15/11	21:57
Ethylbenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
Methyl Bromide	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
Methyl Chloride	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
Methylene Chloride (Dichloromethane)	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
1,1,2,2-Tetrachloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
Tetrachloroethylene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
Toluene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
1,1,1-Trichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
1,1,2-Trichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
Trichloroethylene (Trichloroethene)	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57
Vinyl Chloride	EPA 624	ug/L	<10.0	10.0	SLOPEZ	04/15/11	21:57

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

[2] *1,3-Dichloropropylene is the total of cis-1,3-Dichloropropylene and trans-1,3-Dichloropropylene.*

Cleaning wastewater every day for a better Bay.

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project: Hanover County - Totopotomoy WWTP
Customer Sample ID: Final Effluent
Project Code: HAN_TO
Sample Point: FNE
Sample Date: 04/13/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Semi-Volatile Organics-Acid Extractables							
p-Chloro-m-cresol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
2-Chlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
2,4 Dichlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
2,4 Dimethylphenol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
4,6-Dinitro-o-cresol (2-Methyl-4,6-dinitrophenol)	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
2,4-Dinitrophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
2-Nitrophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
4-Nitrophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Pentachlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Phenol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
2,4,6 Trichlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Semi-Volatile Organics - Base Neutral Extractables							
Acenaphthene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Acenapthylene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Anthracene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Benzidine	EPA 625	ug/L	<10.0	10.0	IGERAS	04/30/11	18:45
Benzo(a)anthracene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Benzo(a)pyrene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Benzo(b)fluoranthene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Benzo(k)fluoranthene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Benzo(GHI)Perylene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Bis-(2-chloroethyl)-Ether	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Bis-(2-Chloroethoxy) Methane	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Bis-2-(Chloroisopropyl) Ether	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Bis-2-ethyl hexyl phthalate (Di-2-Ethylhexyl Phthlate)	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
4-Bromophenyl Phenyl Ether	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Butyl benzyl phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
2-Chloronaphthalene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
4-Chlorophenyl phenyl ether	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Chrysene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Dibenzo(a,h) anthracene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Dibutyl phthalate (Di-n-butyl phthalate)	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Di-n-octyl phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08

Notes:
[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

HRSD
Cleaning wastewater every day for a better Bay.
1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project: Hanover County - Totopotomoy WWTP
Customer Sample ID: Final Effluent
Project Code: HAN_TO
Sample Point: FNE
Sample Date: 04/13/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
3,3-Dichlorobenzidine	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Diethyl phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Dimethyl Phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
2,4-Dinitrotoluene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
2,6-Dinitrotoluene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
1,2-Diphenylhydrazine[2,Δ]	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Fluoranthene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Fluorene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Hexachlorobenzene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Hexachlorobutadiene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Hexachlorocyclopentadiene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Hexachloroethane	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Indeno(1,2,3-cd)pyrene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Isophorone	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Naphthalene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Nitrobenzene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
N-Nitrosodi-n-propyl amine	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
N-Nitrosodimethylamine	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
N-Nitrosodiphenylamine[3]	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Phenanthrene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
Pyrene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08
1,2,4 Trichlorobenzene	EPA 625	ug/L	<10.0	10.0	IGERAS	04/28/11	02:08

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

[2] *1,2-Diphenylhydrazine gets converted to Azobenzene in the extraction process.*

[3] *N-Nitrosodiphenylamine decomposes in the injection port to Diphenylamine.*

[Δ] *Parameter is not included in HRSD CEL VELAP scope of accreditation.*

HRSD
Cleaning wastewater every day for a better Bay.

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project: Hanover County - Totopotomoy WWTP
Customer Sample ID: Final Effluent
Project Code: HAN_TO
Sample Point: FNE
Sample Date: 04/13/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Pesticides & PCB's							
alpha-BHC (Hexachlorocyclohexane)	EPA 608	ug/L	<0.05	0.05	CCURRY	04/19/11	17:04
beta-BHC (Hexachlorocyclohexane)	EPA 608	ug/L	<0.05	0.05	CCURRY	04/19/11	17:04
DDD	EPA 608	ug/L	<0.05	0.05	CCURRY	04/19/11	17:04
DDE	EPA 608	ug/L	<0.05	0.05	CCURRY	04/19/11	17:04
Dieldrin	EPA 608	ug/L	<0.05	0.05	CCURRY	04/19/11	17:04
Endrin aldehyde	EPA 608	ug/L	<0.05	0.05	CCURRY	04/19/11	17:04
Heptachlor epoxide	EPA 608	ug/L	<0.05	0.05	CCURRY	04/19/11	17:04
Kepone	EPA 608	ug/L	<0.10	0.10	CCURRY	04/20/11	08:15
PCB 1016	EPA 608	ug/L	<1.00	1.00	CCURRY	04/19/11	22:56
PCB 1221	EPA 608	ug/L	<1.00	1.00	CCURRY	04/19/11	22:56
PCB 1232	EPA 608	ug/L	<1.00	1.00	CCURRY	04/19/11	22:56
PCB 1242	EPA 608	ug/L	<1.00	1.00	CCURRY	04/19/11	22:56
PCB 1248	EPA 608	ug/L	<1.00	1.00	CCURRY	04/19/11	22:56
PCB 1254	EPA 608	ug/L	<1.00	1.00	CCURRY	04/19/11	22:56
PCB 1260	EPA 608	ug/L	<1.01	1.00	CCURRY	04/19/11	22:56
PCB Total	EPA 608	ug/L	<7.00	7.00	CCURRY	04/19/11	22:56

Notes:
[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

Authorization: _____ **Date:** 05-05-11
Lab Manager / **QA Manager**

CENTRAL ENVIRONMENTAL LABORATORY
QUALITY ASSURANCE REPORT
Level 1

Project: Hanover County - Totopotomoy WWTP
Project Code: HAN_TO
Sample Point: FB; FNE
Sample Date: 04/13/11

Analytical Run Information	Sb	As	Be	Cd	Cr	Cu	Pb	Hg	Ni	Se	Ag	Tl	Zn
Method	200.8	200.8	200.8	200.8	200.8	200.8	200.8	245.1	200.8	200.8	200.8	200.8	200.8
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Method Detection Limit (MDL	0.07	0.03	0.01	0.009	0.09	0.09	0.03	0.03	0.04	0.04	0.008	0.03	0.13
Report Limit (RL)	20.0	20.0	1.0	0.1	5.0	1.0	1.0	0.20	2.0	2.0	0.1	0.1	10.0
Average LRB	0.09*	<0.03	<0.01	0.010*	<0.09	<0.09	<0.03	<0.03	0.07*	<0.04	0.008*	<0.03	<0.13

Dissolved Metals	Cr	Hg
Sample ID: HAN_TO FNE		
Matrix Spike Conc.	10.0	
MS Percent Recovery	96%	
MSD Percent Recovery	96%	
MS/MSD RPD	<1	

Total Metals	Sb	As	Be	Cd	Cu	Pb	Hg	Ni	Se	Ag	Tl	Zn
Sample ID: HAN_TO FNE												
Matrix Spike Conc.	50.0	50.0	5	1.0	10.0	10.0	1.00	10.0	10.0	1.0	1.0	50.0
MS Percent Recovery	100%	98%	94%	92%	85%	100%	121%	84%	94%	90%	101%	84%
MSD Percent Recovery	100%	99%	94%	92%	86%	101%	124%	84%	99%	89%	100%	82%
MS/MSD RPD	<1	<1	1	<1	1	1	2	1	5	<1	1	1

LRB - Laboratory Reagent Blank
MS - Matrix Spike
MSD - Matrix Spike Duplicate
RPD - Relative Percent Difference
*Report Limit is lowest concentration at which quantitation is demonstrated. Values below Report Limit should not be used for compliance determinations due to a high degree of uncertainty.

Validated By: Kevin Wilson

Date: 050411

HRSD
Cleaning wastewater every day for a better Bay.

CENTRAL ENVIRONMENTAL LABORATORY
1432 AIR RAIL AVENUE
VIRGINIA BEACH, VA 23455
TEL: 757-460-4214
FAX: 757-460-6586

CHAIN OF CUSTODY

PROJECT NAME/CODE: Hanover County_Totopotomoy

ANALYSES REQUESTED, CGN & NUMBER OF CONTAINERS

Project in Lims? Yes _____ No X

CUSTOMER SAMPLE ID	HRSD Use Only: PROJECT CODE	HRSD Use Only: SAMPLE POINT	DATE	TIME	SAMPLED BY	Circle One: MATRIX	Circle One: SAMPLE TYPE	Cyanide (4)	Oil & Grease (8...8C)	Total Phenol (3)					HRSD Use Only: Presv'd Checked	HRSD Use Only: CONT. COUNT
	HAN_TO	FNE	4/13/2011	0930	JR	L	G	1 ✓	4 ✓	1 ✓					✓	6

COMMENTS: * No interferences found - JR

For Ground Water Use Only
Temp. Blank 1= °C
Temp. Blank 2= °C

Relinquished by / Signature	Date/Time 4/13/11 @ 1435	Temp. Requirement: Where required, submitted samples were transported in coolers maintained at ≤ 6 °C. Yes ✓ No _____ Int JR
Received by / Signature	Date/Time 4/13/11 @ 1438	
Relinquished by / Signature	Date/Time	
Received by / Signature	Date/Time	
Relinquished by / Signature	Date/Time	
Received by / Signature	Date/Time	
Relinquished by / Signature	Date/Time	
Received by / Signature	Date/Time	

*Preservatives

- *Hg, Metals (pH<2 - HNO3) (Clean metals check in section)
- *O&G (pH<2 - HCl, check in section) & store ≤ 6 °C
- CN^- (pH>12 - NaOH) & store ≤ 6 °C
- *Sulfide (pH>9 - NaOH+ZnAc) & store ≤ 6 °C
- *Micro ($Na_3S_2O_3$ + EDTA) & store < 10 °C
- *COD, NUT, Phenols (pH<2 - H_2SO_4) & store ≤ 6 °C
- *TOC (pH<2 - H_3PO_4) & store ≤ 6 °C
- *BOD, TSS, TVSS, Turbidity, Surfactant, Sulfate store ≤ 6 °C
- *NUT Non Acidified, Conductivity, Organics store ≤ 6 °C
- *Cr (VI) (pH 9.3 - 9.7 - $(NH_4)_2SO_4$) & store ≤ 6 °C

All sample(s) met proper *preservation requirements. Yes ✓ No _____ Int JR

Sample Type: C=Composite, G=Grab Matrix: L= Liquid , S = Solid CGN: Container Group Number

NOTE: ALL APPLICABLE INFORMATION MUST BE COMPLETED PRIOR TO ACCEPTANCE.

HRSD
Cleaning wastewater every day for a better Bay.

CENTRAL ENVIRONMENTAL LABORATORY
1432 AIR RAIL AVENUE
VIRGINIA BEACH, VA 23455
TEL: 757-460-4214
FAX: 757-460-6586

CHAIN OF CUSTODY

PROJECT NAME/CODE: Hanover County_Totopotomoy

Project in Lims? Yes X No

CUSTOMER SAMPLE ID	PROJECT CODE (HRSD Use Only)	SAMPLE POINT (HRSD Use Only)	DATE	TIME	SAMPLED BY	MATRIX (Circle One)	SAMPLE TYPE (Circle One)	TOTAL METALS (5)	Dissolved Metals (55)	Hydrogen Sulfide (18)	~~Total Dissolved~~ Solids (1) JR	VOA (10...10B)	VOA (10...10E)	SemiVol Organics (9...9C)	SemiVol Organics (9...9O)	Presv'd Checked (HRSD Use Only)	CONT. COUNT (HRSD Use Only)
	HAN_TO	FB	4/13/2011	1017	JR	L	C	1 ✓	1 ✓					4 ✓		✓	6
	HAN_TO	FB	4/13/2011	0910	JR	L	G					3 ✓				✓	3
	HAN_TO	FNE	4/13/2011	1017	JR	L	C	1 ✓	1 ✓	1 ✓	1 ✓				16 ✓	✓	20
	HAN_TO	FNE	4/13/2011	0915	JR	L	G						6 ✓			✓	6

COMMENTS: *No interferences found - JR

For Ground Water Use Only
Temp. Blank 1 ____ °C
Temp. Blank 2 ____ °C

Relinquished by / Signature [signature]	Date/Time 4/13/11 @ 1435
Received by / Signature [signature]	Date/Time 4/13/11 @ 1437
Relinquished by / Signature	Date/Time
Received by / Signature	Date/Time
Relinquished by / Signature	Date/Time
Received by / Signature	Date/Time
Relinquished by / Signature	Date/Time
Received by / Signature	Date/Time

Temp. Requirement

Where required, submitted samples were transported in coolers maintained at ≤ 6 °C.

Yes ✓ No ____

Int JR

***Preservatives**

- *Hg, Metals (pH<2 - HNO3) (Clean metals check in section)
- *O&G (pH<2 - HCl, check in section) & store ≤ 6 °C
- CN^- (pH>12 - NaOH) & store < 6 °C
- *Sulfide (pH>9 - NaOH+ZnAc) & store ≤ 6 °C
- *Micro ($Na_3S_2O_3$ + EDTA) & store < 10 °C
- *COD, NUT, Phenols (pH<2 - H_2SO_4) & store ≤ 6 °C
- *TOC (pH<2 - H_3PO_4) & store ≤ 6 °C
- *BOD, TSS, TVSS, Turbidity, Surfactant, Sulfate store ≤ 6 °C
- *NUT Non Acidified, Conductivity, Organics store ≤ 6 °C
- *Cr (VI) (pH 9.3 - 9.7 - $(NH_4)_2SO_4$) & store ≤ 6 °C

All sample(s) met proper *preservation requirements. Yes ✓ No ____ Int [initials]

Sample Type: C=Composite, G=Grab Matrix: L= Liquid , S = Solid CGN: Container Group Number

NOTE: ALL APPLICABLE INFORMATION MUST BE COMPLETED PRIOR TO ACCEPTANCE.

FIELD RECORD (S)

Totopotomoy Treatment Plant Field Sheet

Information To Be Checked Before The Start of Each Sampling Event

1. Does the Final Effluent have any abnormal characteristics (odor, color)? Y (N)

If the answer to the above questions is NO proceed to the next section. Please contact a supervisor if the answer is YES.

2. A. Average Plant flow for the last five days: 2.36MG
   B. Expected Plant flow for the next 24 hours: 2.4MG
3. List the last three days of Final Effluent TSS with the most recent last: 4/11 6.6, 4/4 3.6, 3/27 2.8
4. Contact Closure: (Expected Flow / 1000 / 40) 60 Pulses per sample.
5. Samplers for Final Effluent & FB calibrated at 450 ml per sample. (Desired volume/)
   Final Effluent Start Time / Date: 1017 @ 4/12/11
   FB Start Time / Date: 1017 @ 4/12/11

The above information has been completed prior to the beginning of the sampling event. Int. JR

Sampling personnel: J. Reitz, A. Williamson

Information Check At The End Of The Sampling Event

1. Are all lids, compression assemblies and caps secure? (Y) / N
2. Final Effluent TSS for the sampling period: ~~2.39MGD~~ JR 6.0 mg/L 4/13/11
3. Plant flow for the sampling period 2.39 MG
4. Number of samples collected in each Final Effluent & FB composite container:
   Final Effluent: 42
   FB: 41 *
   TBT: N/A
5. Final Effluent & FB composite end time and date:
   Final Effluent End Time / Date: 1017 @ 4/13/11
   FB End Time / Date: 1017 @ 4/13/11
6. Is Temperature in collection container at the end of sampling <6° C? (Y) / N
7. Are sample volumes equal in all composite containers? Y (N) *
8. Grab times and dates:
   FB VOA: 0910 @ 4/13/11
   Cyanide: 0930 @ 4/13/11
   Oil & Grease: 0930 @ 4/13/11
   FNE VOA: 0915 @ 4/13/11
   Phenol: 0930 @ 4/13/11

Sampling personnel: J. Reitz, A. Williamson

Please contact project lead with any problems incurred during the sampling event.

Record any other information that could affect sample results:

* FB missed last sample, ran out of source water

HRSD
Cleaning wastewater every day for a better Bay.
1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

11/16/11 - Hanover County - Totopotomoy Permit Application

This analytical report contains 12 pages

Matt Ellinghaus
Hanover County
Department of Public Utilities
P.O. Box 470
Hanover, VA 23069

mbellinghaus@co.hanover.va.us

cc: Regina Andrepont Cuthbert

racuthbert@co.hanover.va.us

Date Sent: 12/06/11

HRSD CEL, Central Environmental Laboratory is VELAP/NELAC accredited by DCLS, the Division of Consolidated Laboratory Services.

VA Laboratory ID#: 460011
Effective Date: October 11, 2011
Expiration Date: June 14, 2012
Certificate # 1248

Analytical test results meet all requirements of VELAP/NELAC unless otherwise noted under the analysis.

Test results relate only to the sample tested. Clients should be aware that a critical step in chemical or microbiological analysis is the collection of the sample.

If you have any questions concerning this report, please do not hesitate to contact
Danny Barker, TSD Environmental Scientist at (757) 460-4247
dbarker@hrsd.com
Robin Parnell, CEL Laboratory Manager at (757) 460-4203.
rparnell@hrsd.com
Cindi Reno, CEL Administrative Assistant at (757) 460-4205.
creno@hrsd.com

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project:	Hanover County - Totopotomoy WWTP
Customer Sample ID:	Field Blank
Project Code:	HAN_TO
Sample Point:	FB
Sample Date:	11/16/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Total Metals							
Chromium	EPA 200.8	ug/L	<1.0	1.0	KWILLI	11/28/11	10:54
Selenium	EPA 200.8	ug/L	<0.50	0.50	KWILLI	11/28/11	10:54
Dissolved Metals							
Antimony	EPA 200.8	ug/L	<1.0	1.0	KWILLI	11/28/11	10:47
Arsenic	EPA 200.8	ug/L	<1.0	1.0	KWILLI	11/28/11	10:47
Beryllium	EPA 200.8	ug/L	<0.10	0.10	KWILLI	11/28/11	10:47
Cadmium	EPA 200.8	ug/L	<0.05	0.05	KWILLI	11/30/11	10:56
Chromium III (measured as Total Chromium)		ug/L	<1.0	1.0	KWILLI	11/28/11	10:54
Chromium VI (measured as Total Chromium)		ug/L	<1.0	1.0	KWILLI	11/28/11	10:54
Copper	EPA 200.8	ug/L	<0.50	0.50	KWILLI	11/28/11	10:47
Lead	EPA 200.8	ug/L	<0.10	0.10	KWILLI	11/30/11	10:56
Mercury	EPA 245.1	ug/L	<0.10	0.10	SLABOC	11/30/11	09:14
Nickel	EPA 200.8	ug/L	<0.50	0.50	KWILLI	11/28/11	10:47
Silver	EPA 200.8	ug/L	<0.10	0.10	KWILLI	11/28/11	10:47
Thallium	EPA 200.8	ug/L	<0.10	0.10	KWILLI	11/30/11	10:56
Zinc	EPA 200.8	ug/L	<1.0	1.0	KWILLI	11/28/11	10:47

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project:	Hanover County - Totopotomoy WWTP
Customer Sample ID:	Field Blank
Project Code:	HAN_TO
Sample Point:	FB
Sample Date:	11/16/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Volatile Organics							
Acrolein	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
Acrylonitrile	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
Benzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
Bromoform	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
Carbon Tetrachloride	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
Chlorobenzene (Monochlorobenzene)	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
Chlorodibromomethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
Chloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
2-Chloro-ethylvinyl Ether	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
Chloroform	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
Dichlorobromomethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
1,2 Dichlorobenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
1,3 Dichlorobenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
1,4 Dichlorobenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
1,1-Dichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
1,2-Dichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
1,1-Dichloroethylene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
1,2-trans-Dichloroethylene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
1,2-Dichloropropane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
1,3 Dichloropropylene (1,3-Dichloropropene)[2]	EPA 624	ug/L	<20.0	20.0	SLOPEZ	11/18/11	13:21
Ethylbenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
Methyl Bromide	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
Methyl Chloride	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
Methylene Chloride (Dichloromethane)	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
1,1,2,2-Tetrachloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
Tetrachloroethylene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
Toluene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
1,1,1-Trichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
1,1,2-Trichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
Trichloroethylene (Trichloroethene)	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21
Vinyl Chloride	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	13:21

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

[2] *1,3-Dichloropropylene is the total of cis-1,3-Dichloropropylene and trans-1,3-Dichloropropylene.*

HRSD
Cleaning wastewater every day for a better Bay
1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project:	Hanover County - Totopotomoy WWTP
Customer Sample ID:	Field Blank
Project Code:	HAN_TO
Sample Point:	FB
Sample Date:	11/16/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Semi-Volatile Organics-Acid Extractables							
p-Chloro-m-cresol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
2-Chlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
2,4 Dichlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
2,4 Dimethylphenol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
4,6-Dinitro-o-cresol (2-Methyl-4,6-dinitrophenol)	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
2,4-Dinitrophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
2-Nitrophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
4-Nitrophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Pentachlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Phenol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
2,4,6 Trichlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Semi-Volatile Organics - Base Neutral Extractables							
Acenaphthene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Acenapthylene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Anthracene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Benzidine	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Benzo(a)anthracene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Benzo(a)pyrene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Benzo(b)fluoranthene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Benzo(k)fluoranthene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Benzo(GHI)Perylene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Bis-(2-chloroethyl)-Ether	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Bis-(2-Chloroethoxy) Methane	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Bis-2-(Chloroisopropyl) Ether	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Bis-2-ethyl hexyl phthalate (Di-2-Ethylhexyl Phthlate)	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
4-Bromophenyl Phenyl Ether	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Butyl benzyl phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
2-Chloronaphthalene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
4-Chlorophenyl phenyl ether	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Chrysene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Dibenzo(a,h) anthracene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Dibutyl phthalate (Di-n-butyl phthalate)	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Di-n-octyl phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

Cleaning wastewater every day for a better Bay.

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project:	Hanover County - Totopotomoy WWTP
Customer Sample ID:	Field Blank
Project Code:	HAN_TO
Sample Point:	FB
Sample Date:	11/16/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
3,3-Dichlorobenzidine	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Diethyl phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Dimethyl Phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
2,4-Dinitrotoluene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
2,6-Dinitrotoluene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
1,2-Diphenylhydrazine[2,Δ]	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Fluoranthene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Fluorene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Hexachlorobenzene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Hexachlorobutadiene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Hexachlorocyclopentadiene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Hexachloroethane	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Indeno(1,2,3-cd)pyrene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Isophorone	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Naphthalene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Nitrobenzene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
N-Nitrosodi-n-propyl amine	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
N-Nitrosodimethylamine	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
N-Nitrosodiphenylamine[3]	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Phenanthrene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
Pyrene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39
1,2,4 Trichlorobenzene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/29/11	23:39

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

[2] *1,2-Diphenylhydrazine gets converted to Azobenzene in the extraction process.*

[3] *N-Nitrosodiphenylamine decomposes in the injection port to Diphenylamine.*

[Δ] *Parameter is not included in HRSD VELAP scope of accreditation.*

Authorization: Robin Parnell Date: 12/5/11

Lab Manager / QA Manager

HRSD
Cleaning wastewater every day for a better Bay
1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project:	Hanover County - Totopotomoy WWTP
Customer Sample ID:	Final Effluent
Project Code:	HAN_TO
Sample Point:	FNE
Sample Date:	11/16/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Miscellaneous Parameters							
Free Cyanide[A]	ASTM D 4282	ug/L	<10	10	JRICKS	11/17/11	07:15
Oil and Grease HEM	EPA 1664A	mg/L	<5.0	5.0	RMORGA	11/18/11	07:15
Total Dissolved Solids	SM 2540C	mg/L	390	1.0	TGAY	11/17/11	11:00
Total Phenol	LACH 10-210-00-1-B	mg/L	<0.05	0.05	JRICKS	12/01/11	10:33
Hardness (as $CaCO_3$)	SM2340B	mg eq $CaCO_3$/L	79.3	0.20	SWILLI	12/01/11	09:14
Total Metals							
Chromium	EPA 200.8	ug/L	<1.0	1.0	KWILLI	11/28/11	11:20
Selenium	EPA 200.8	ug/L	<0.50	0.50	KWILLI	11/28/11	11:20
Dissolved Metals							
Antimony	EPA 200.8	ug/L	<1.0	1.0	KWILLI	11/28/11	11:00
Arsenic	EPA 200.8	ug/L	<1.0	1.0	KWILLI	11/28/11	11:00
Beryllium	EPA 200.8	ug/L	<0.10	0.10	KWILLI	11/28/11	11:00
Cadmium	EPA 200.8	ug/L	<0.05	0.05	KWILLI	11/30/11	11:02
Chromium III (measured as Total Chromium)		ug/L	<1.0	1.0	KWILLI	11/28/11	11:20
Chromium VI (measured as Total Chromium)		ug/L	<1.0	1.0	KWILLI	11/28/11	11:20
Copper	EPA 200.8	ug/L	1.43	0.50	KWILLI	11/28/11	11:00
Lead	EPA 200.8	ug/L	<0.10	0.10	KWILLI	11/30/11	11:02
Mercury	EPA 245.1	ug/L	<0.10	0.10	SLABOC	11/30/11	09:17
Nickel	EPA 200.8	ug/L	1.26	0.50	KWILLI	11/28/11	11:00
Silver	EPA 200.8	ug/L	<0.10	0.10	KWILLI	11/28/11	11:00
Thallium	EPA 200.8	ug/L	<0.10	0.10	KWILLI	11/30/11	11:02
Zinc	EPA 200.8	ug/L	37.5	1.0	KWILLI	11/30/11	11:02

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

[A] *Parameter is not included in HRSD VELAP scope of accreditation.*

HRSD
Cleaning wastewater every day for a better Bay.
1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project:	Hanover County - Totopotomoy WWTP
Customer Sample ID:	Final Effluent
Project Code:	HAN_TO
Sample Point:	FNE
Sample Date:	11/16/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Volatile Organics							
Acrolein	EPA 624	ug/L	<50.0	50.0	SLOPEZ	11/18/11	11:52
Acrylonitrile	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
Benzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
Bromoform	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
Carbon Tetrachloride	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
Chlorobenzene (Monochlorobenzene)	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
Chlorodibromomethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
Chloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
2-Chloro-ethylvinyl Ether	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
Chloroform	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
Dichlorobromomethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
1,2 Dichlorobenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
1,3 Dichlorobenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
1,4 Dichlorobenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
1,1-Dichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
1,2-Dichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
1,1-Dichloroethylene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
1,2-trans-Dichloroethylene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
1,2-Dichloropropane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
1,3 Dichloropropylene (1,3-Dichloropropene)[2]	EPA 624	ug/L	<20.0	20.0	SLOPEZ	11/18/11	18:47
Ethylbenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
Methyl Bromide	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
Methyl Chloride	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
Methylene Chloride (Dichloromethane)	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
1,1,2,2-Tetrachloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
Tetrachloroethylene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
Toluene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
1,1,1-Trichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
1,1,2-Trichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
Trichloroethylene (Trichloroethene)	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47
Vinyl Chloride	EPA 624	ug/L	<10.0	10.0	SLOPEZ	11/18/11	18:47

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

[2] *1,3-Dichloropropylene is the total of cis-1,3-Dichloropropylene and trans-1,3-Dichloropropylene.*

HRSD
Cleaning wastewater every day for a better Bay
1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project:	Hanover County - Totopotomoy WWTP
Customer Sample ID:	Final Effluent
Project Code:	HAN_TO
Sample Point:	FNE
Sample Date:	11/16/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Semi-Volatile Organics-Acid Extractables							
p-Chloro-m-cresol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
2-Chlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
2,4 Dichlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
2,4 Dimethylphenol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
4,6-Dinitro-o-cresol (2-Methyl-4,6-dinitrophenol)	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
2,4-Dinitrophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
2-Nitrophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
4-Nitrophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Pentachlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Phenol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
2,4,6 Trichlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Semi-Volatile Organics - Base Neutral Extractables							
Acenaphthene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Acenapthylene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Anthracene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Benzidine[2]	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Benzo(a)anthracene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Benzo(a)pyrene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Benzo(b)fluoranthene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Benzo(k)fluoranthene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Benzo(GHI)Perylene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Bis-(2-chloroethyl)-Ether	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Bis-(2-Chloroethoxy) Methane	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Bis-2-(Chloroisopropyl) Ether	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Bis-2-ethyl hexyl phthalate (Di-2-Ethylhexyl Phthlate)	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
4-Bromophenyl Phenyl Ether	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Butyl benzyl phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
2-Chloronaphthalene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
4-Chlorophenyl phenyl ether	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Chrysene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Dibenzo(a,h) anthracene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Dibutyl phthalate (Di-n-butyl phthalate)	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Di-n-octyl phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

[2] *Low recovery in the Matrix Spike due to possible matrix interference*

The recoveries in the Matrix Spike Duplicate and Laboratory Control Sample were within acceptable limits.

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

Cleaning wastewater every day for a better Bay.

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project: Hanover County - Totopotomoy WWTP
Customer Sample ID: Final Effluent
Project Code: HAN_TO
Sample Point: FNE
Sample Date: 11/16/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
3,3-Dichlorobenzidine	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Diethyl phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Dimethyl Phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
2,4-Dinitrotoluene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
2,6-Dinitrotoluene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
1,2-Diphenylhydrazine[2,Δ]	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Fluoranthene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Fluorene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Hexachlorobenzene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Hexachlorobutadiene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Hexachlorocyclopentadiene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Hexachloroethane	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Indeno(1,2,3-cd)pyrene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Isophorone	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Naphthalene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Nitrobenzene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
N-Nitrosodi-n-propyl amine	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
N-Nitrosodimethylamine	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
N-Nitrosodiphenylamine[3]	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Phenanthrene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
Pyrene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12
1,2,4 Trichlorobenzene	EPA 625	ug/L	<10.0	10.0	IGERAS	11/30/11	00:12

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

[2] *1,2-Diphenylhydrazine gets converted to Azobenzene in the extraction process.*

[3] *N-Nitrosodiphenylamine decomposes in the injection port to Diphenylamine.*

[Δ] *Parameter is not included in VELAP scope of accreditation.*

Authorization: Robin Parnell
Lab Manager / QA Manager

Date: 12/5/11

CENTRAL ENVIRONMENTAL LABORATORY
QUALITY ASSURANCE REPORT
Level 1

Project: Hanover County - Totopotomoy WWTP
Project Code: HAN_TO
Sample Point: FB; FNE
Sample Date: 11/16/11

Analytical Run Information	Sb	As	Be	Cd	Cr	Cu	Pb	Hg	Ni	Se	Ag	Tl	Zn
Method	200.8	200.8	200.8	200.8	200.8	200.8	200.8	245.1	200.8	200.8	200.8	200.8	200.8
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Limit of Detection (LOD)	0.22	0.06	0.01	0.050	0.04	0.09	0.01	0.03	0.08	0.12	0.05	0.03	0.24
Limit of Quantitation (LOQ)	1.0	1.00	0.10	0.100	1.0	0.50	0.10	0.10	0.50	0.50	0.10	0.10	1.0
Method Blank (MB)	<0.22	<0.06	<0.01	<0.05	<0.04	<0.09	<0.01	<0.03	<0.08	<0.12	<0.05	<0.03	<0.24

Dissolved Metals	Sb	As	Be	Cd		Cu	Pb	Hg	Ni		Ag	Tl	Zn
Sample ID: HAN_TO FNE													
Matrix Spike Conc.	5.0	5.0	1	1.0		5.0	1.0	1.0	1.0		1.0	1.0	40.0
MS Percent Recovery	100%	102%	94%	95%		91%	99%	103%	88%		95%	99%	82%
MSD Percent Recovery	97%	101%	92%	94%		93%	99%	104%	91%		92%	99%	85%
MS/MSD RPD	2	1	3	1		1	<1	1	2		3	<1	1

Total Metals	Cr	Se
Sample ID: HAN_TO FNE		
Matrix Spike Conc.	5.0	1.0
MS Percent Recovery	98%	88%
MSD Percent Recovery	102%	86%
MS/MSD RPD	3	3

MS - Matrix Spike
MSD - Matrix Spike Duplicate
RPD - Relative Percent Difference
*Report Limit is lowest concentration at which quantitation is demonstrated. Values below Report Limit should not be used for compliance determinations due to a high degree of uncertainty.

Validated By: Cynthia Bosto

Date: 12/5/11

HRSD
Cleaning wastewater every day for a better Bay.

CENTRAL ENVIRONMENTAL LABORATORY
1432 AIR RAIL AVENUE
VIRGINIA BEACH, VA 23455
TEL: 757-460-4214
FAX: 757-460-6586

CHAIN OF CUSTODY

PROJECT NAME/CODE: Hanover County_Totopotomoy

ANALYSES REQUESTED, CGN & NUMBER OF CONTAINERS

Project In Lims? Yes ____ No X

CUSTOMER SAMPLE ID	HRSD Use Only: PROJECT CODE	SAMPLE POINT	DATE	TIME	SAMPLED BY	Circle One: MATRIX	Circle One: SAMPLE TYPE	TOTAL METALS (5)	Dissolved Metals (5S)	Total Dissolved Solids (1)	VOA (10...10 B)	VOA (10...10 E)	SemiVol Organics (5...5B)	SemiVol Organics (3...3 E)				HRSD Use Only: Presv'd Checked	CONT. COUNT
	HAN_TO	FB	11/16/2011	1119	JR	L	C	1 ✓	1 ✓				2 ✓					✓	4
	HAN_TO	FB	11/16/2011	1020	JR	L	G				3 ✓							✓	3
	HAN_TO	FNE	11/16/2011	1119	JR	L	C	1 ✓	1 ✓	1 ✓				7 ✓				✓	10
	HAN_TO	FNE	11/16/2011	1050	JR	L	G					6 ✓						✓	6

COMMENTS:

For Ground Water Use Only
Temp. Blank 1 ____ °C
Temp. Blank 2 - ____ °C

Relinquished by / Signature: Jennifer Reitz	Date/Time	11/16/11@1508
Received by / Signature: Julia Wallace	Date/Time	11/16/11@1508
Relinquished by / Signature	Date/Time	
Received by / Signature	Date/Time	
Relinquished by / Signature	Date/Time	
Received by / Signature	Date/Time	
Relinquished by / Signature	Date/Time	
Received by / Signature	Date/Time	

Temp. Requirement

Where required, submitted samples were transported in coolers maintained at ≤ 6 °C.

Yes ✓ No ____

Int JR

***Preservatives**

- *Hg, Metals (pH<2 - HNO3) (Clean metals check in section)
- *O&G (pH<2 - HCl, check in section) & store ≤ 6 °C
- CN^- (pH>12 - NaOH) & store ≤ 6 °C
- *Sulfide (pH>9 - NaOH+ZnAc) & store ≤ 6 °C
- *Micro ($Na_2S_2O_3$ + EDTA) & store < 10 °C
- *COD, NUT, Phenols (pH<2 - H_2SO_4) & store ≤ 6 °C
- *TOC (pH<2 - H_3PO_4) & store ≤ 6 °C
- *BOD, TSS, TVSS, Turbidity, Surfactant, Sulfate store ≤ 6 °C
- *NUT Non Acidified, Conductivity, Organics store ≤ 6 °C
- *Cr (VI) (pH 9.3 - 9.7 - $(NH_4)_2SO_4$) & store ≤ 6 °C

All sample(s) met proper *preservation requirements. Yes ✓ No ____ Int JR

Sample Type: C=Composite, G=Grab Matrix: L= Liquid , S = Solid CGN: Container Group Number

NOTE: ALL APPLICABLE INFORMATION MUST BE COMPLETED PRIOR TO ACCEPTANCE.

HRSD
Cleaning wastewater every day for a better Bay.

CENTRAL ENVIRONMENTAL LABORATORY
1432 AIR RAIL AVENUE
VIRGINIA BEACH, VA 23455
TEL: 757-460-4214
FAX: 757-460-6586

CHAIN OF CUSTODY

PROJECT NAME/CODE: Hanover County_Totopotomoy

ANALYSES REQUESTED, CGN & NUMBER OF CONTAINERS

Project in Lims? Yes X No

CUSTOMER SAMPLE ID	HRSD Use Only: PROJECT CODE	HRSD Use Only: SAMPLE POINT	DATE	TIME	SAMPLED BY	Circle One: MATRIX	Circle One: SAMPLE TYPE	Free Cyanide (64)	Oil & Grease (8...6C)	Total Phenol (3)						HRSD Use Only: Presv'd Checked	HRSD Use Only: CONT. COUNT
	HAN_TO	FNE	11/16/2011	1028	JR	L	G	1 ✓	4 ✓	1 ✓						✓	Co

COMMENTS:

For Ground Water Use Only
Temp. Blank 1 - °C
Temp. Blank 2 - °C

Relinquished by / Signature: Jennifer Reitz	Date/Time: 11/16/11 @ 1508	
Received by / Signature: Juliana Dean	Date/Time: 11/16/11 @ 1508	
Relinquished by / Signature	Date/Time	
Received by / Signature	Date/Time	
Relinquished by / Signature	Date/Time	
Received by / Signature	Date/Time	
Relinquished by / Signature	Date/Time	
Received by / Signature	Date/Time	

Temp. Requirement

Where required, submitted samples were transported in coolers maintained at ≤ 6 °C.

Yes ✓ No

Int JR

***Preservatives**

- *Hg, Metals (pH<2 - HNO3) (Clean metals check in section)
- *O&G (pH<2 - HCl, check in section) & store ≤ 6 °C
- CN^- (pH>12 - NaOH) & store ≤ 6 °C
- *Sulfide (pH>9 - NaOH+ZnAc) & store ≤ 6 °C
- *Micro ($Na_2S_2O_3$ + EDTA) & store < 10 °C
- *COD, NUT, Phenols (pH<2 - H_2SO_4) & store ≤ 6 °C
- *TOC (pH<2 - H_3PO_4) & store ≤ 6 °C
- *BOD, TSS, TVSS, Turbidity, Surfactant, Sulfate store ≤ 6 °C
- *NUT Non Acidified, Conductivity, Organics store ≤ 6 °C
- *Cr (VI) (pH 9.3 - 9.7 - $(NH_4)_2SO_4$) & store ≤ 6 °C

All sample(s) met proper *preservation requirements. Yes ✓ No Int JDean

Sample Type: C=Composite, G=Grab Matrix: L= Liquid , S = Solid CGN: Container Group Number

NOTE: ALL APPLICABLE INFORMATION MUST BE COMPLETED PRIOR TO ACCEPTANCE.

FIELD RECORD (S)

Totopotomoy Treatment Plant Field Sheet

Information To Be Checked Before The Start of Each Sampling Event

1. Does the Final Effluent have any abnormal characteristics (odor, color)? Y / (N)

If the answer to the above questions is NO proceed to the next section. Please contact a supervisor if the answer is YES.

2. A. Average Plant flow for the last five days: 2.2 MGD
   B. Expected Plant flow for the next 24 hours: 2.2 MGD
3. List the last three days of Final Effluent TSS with the most recent last: 2.0 11/13, 2.3 11/14 2.2 10/30
4. Contact Closure: (Expected Flow / 1000 / 30) 73 Pulses per sample.
5. Samplers for Final Effluent & FB calibrated at 500 ml per sample. (Desired volume/30) 15,000
   Final Effluent Start Time / Date: 1119 11/15/11
   FB Start Time / Date: 1119 11/15/11

The above information has been completed prior to the beginning of the sampling event. Int. JR

Sampling personnel: J. Reitz, A. Williamson

Information Check At The End Of The Sampling Event

1. Are all lids, compression assemblies and caps secure? (Y) / N
2. Final Effluent TSS for the sampling period: 2.1 mg/L 11/14
3. Plant flow for the sampling period 2.1 MGD 11/15, 3.1 MGD 11/14
4. Number of samples collected in each Final Effluent & FB composite container:
   Final Effluent: 35
   FB: 35
   TBT: N/A
5. Final Effluent & FB composite end time and date:
   Final Effluent End Time / Date: 1119 11/16/11
   FB End Time / Date: 1119 11/16/11
6. Is Temperature in collection container at the end of sampling <6° C? (Y) / N
7. Are sample volumes equal in all composite containers? (Y) N
8. Grab times and dates:
   FB VOA: 1020 11/16/11
   Cyanide: 1028 11/16/11
   Oil & Grease: 1028 11/16/11
   FNE VOA: 1050 11/16/11
   Phenol: 1028 11/16/11

Sampling personnel: J. Reitz, A. Williamson

Please contact project lead with any problems incurred during the sampling event.

Record any other information that could affect sample results:

HANOVER COUNTY, VIRGINIA
PURCHASE REQUISITION

(RECORD TELEPHONE QUOTES ON BACK)

REQUISITION NUMBER	
Dept.	PURCH.

VENDOR MAILING ADDRESS

TeamViewer Inc.
3001 North Rocky Point Drive East
Suite 200
Tampa, FL 33607
USA

Kimberly Magee
magee@teamviewer.com

Fax 1 855 352 7610
Phone 1 800 951 4573 (toll-free)

BILL
TO: Hanover County Public Utilities
P.O. Box 470
Hanover, VA 23069

SHIP
Hanover County DPU
9015 Pole Green Park Lane
Mechanicsville Va. 23116
Attn: Chuck Smith

Phone # Fax#: VENDOR #:

DATE REQUESTED	DATE REQUIRED	PURCHASE ORDER NO.	This requisition will be returned if not properly signed and coded.
1/3/12	1/17/12	4791312	

ITEM	QTY.	UNIT	DESCRIPTION	UNIT PRICE	TOTAL
1	1	ea	TU310-312.57 Software Upgrade from premium 5.X to Corporate 7.X	2,069.00	2,069.00
			remote access & support over the Internet		
			Corporate license will allow for 3 simultaneous users on same machine or 3 users on separate machines		
			Used at TWWTP, DWTP, DWWTP, Pole Green Operation Center		
			Budget Code 4-400-442038-5234 Maintennace Non-Cyclical Computer Equipment		
			Per Email Quote Q97808-ZGKM		
			Julian "Grey" Gonzalez		
			Contact Chuck Smith 804 - 365 - 673		
				Freight	
				Total	2,069.00

Item	R/E	Fund	Dept	Obj	Cost	Prog	Proj	AMOUNT

I certify that the items specified above are necessry for use by this department and funds are available in the budget codes given.

Chuck Smith
Signature:

JUL 21 2011

HRSD
Cleaning wastewater every day for a better Bay.

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

06/22/11 - Hanover County - Totopotomoy Permit Application

This analytical report contains 17 pages

Matt Ellinghaus
Hanover County
Department of Public Utilities
P.O. Box 470
Hanover, VA 23069

mbellinghaus@co.hanover.va.us

cc: Regina Andrepont Cuthbert

racuthbert@co.hanover.va.us

Date Sent: 07/18/11

HRSD CEL, Central Environmental Laboratory is VELAP/NELAC accredited by DCLS, the Division of Consolidated Laboratory Services.

VA Laboratory ID#: 460011
Effective Date: June 15, 2011
Expiration Date: June 14, 2012
Certificate # 911

Analytical test results meet all requirements of VELAP/NELAC unless otherwise noted under the analysis.

Test results relate only to the sample tested. Clients should be aware that a critical step in chemical or microbiological analysis is the collection of the sample.

If you have any questions concerning this report, please do not hesitate to call Danny Barker, TSD Environmental Scientist at (757) 460-4247, Robin Parnell, CEL Laboratory Manager at (757) 460-4203 or Cindi Reno, CEL Administrative Assistant at (757) 460-4205.

HRSD
Cleaning wastewater every day for a better Bay.

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project: Hanover County - Totopotomoy WWTP
Customer Sample ID: Field Blank
Project Code: HAN_TO
Sample Point: FB
Sample Date: 06/22/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Total Metals							
Chromium	EPA 200.8	ug/L	<1.0	1.0	KWILLI	06/28/11	11:22
Selenium	EPA 200.8	ug/L	<0.50	0.50	KWILLI	06/28/11	11:22
Dissolved Metals							
Antimony	EPA 200.8	ug/L	<0.50	0.50	KWILLI	06/28/11	11:16
Arsenic	EPA 200.8	ug/L	<1.0	1.0	KWILLI	06/28/11	11:16
Beryllium	EPA 200.8	ug/L	<0.10	0.10	KWILLI	06/28/11	11:16
Cadmium	EPA 200.8	ug/L	<0.05	0.05	KWILLI	06/28/11	11:16
Chromium III (measured as Total Chromium)		ug/L	<1.0	1.0	KWILLI	06/28/11	11:22
Chromium VI (measured as Total Chromium)		ug/L	<1.0	1.0	KWILLI	06/28/11	11:22
Copper	EPA 200.8	ug/L	<0.50	0.50	KWILLI	06/28/11	11:16
Lead	EPA 200.8	ug/L	<0.10	0.10	KWILLI	06/28/11	11:16
Mercury	EPA 245.1	ug/L	<0.10	0.10	SWILLI	06/29/11	09:48
Nickel	EPA 200.8	ug/L	<0.50	0.50	KWILLI	06/28/11	11:16
Selenium	EPA 200.8	ug/L	<0.50	0.50	KWILLI	06/28/11	11:16
Silver	EPA 200.8	ug/L	<0.05	0.05	KWILLI	06/28/11	11:16
Thallium	EPA 200.8	ug/L	<0.10	0.10	KWILLI	06/28/11	11:16
Zinc	EPA 200.8	ug/L	1.0	1.0	KWILLI	06/28/11	11:16

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

HRSD
Cleaning wastewater every day for a better Bay.

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project: Hanover County - Totopotomoy WWTP
Customer Sample ID: Field Blank
Project Code: HAN_TO
Sample Point: FB
Sample Date: 06/22/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Volatile Organics							
Acrolein	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	12:43
Acrylonitrile	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
Benzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
Bromoform	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
Carbon Tetrachloride	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
Chlorobenzene (Monochlorobenzene)	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
Chlorodibromomethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
Chloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
2-Chloro-ethylvinyl Ether	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
Chloroform	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
Dichlorobromomethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
1,2 Dichlorobenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
1,3 Dichlorobenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
1,4 Dichlorobenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
1,1-Dichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
1,2-Dichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
1,1-Dichloroethylene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
1,2-trans-Dichloroethylene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
1,2-Dichloropropane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
1,3 Dichloropropylene (1,3-Dichloropropene)[2]	EPA 624	ug/L	<20.0	20.0	SLOPEZ	06/24/11	03:12
Ethylbenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
Methyl Bromide	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
Methyl Chloride	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
Methylene Chloride (Dichloromethane)	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
1,1,2,2-Tetrachloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
Tetrachloroethylene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
Toluene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
1,1,1-Trichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
1,1,2-Trichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
Trichloroethylene (Trichloroethene)	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12
Vinyl Chloride	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	03:12

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

[2] *1,3-Dichloropropylene is the total of cis-1,3-Dichloropropylene and trans-1,3-Dichloropropylene.*

HRSD
Cleaning wastewater every day for a better Bay.

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project: Hanover County - Totopotomoy WWTP
Customer Sample ID: Field Blank
Project Code: HAN_TO
Sample Point: FB
Sample Date: 06/22/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Semi-Volatile Organics-Acid Extractables							
p-Chloro-m-cresol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
2-Chlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
2,4 Dichlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
2,4 Dimethylphenol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
4,6-Dinitro-o-cresol (2-Methyl-4,6-dinitrophenol)	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
2,4-Dinitrophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
2-Nitrophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
4-Nitrophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Nonylphenol [Δ]	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Pentachlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Phenol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
2,4,6 Trichlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Semi-Volatile Organics - Base Neutral Extractables							
Acenaphthene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Acenapthylene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Anthracene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Benzidine	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Benzo(a)anthracene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Benzo(a)pyrene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Benzo(b)fluoranthene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Benzo(k)fluoranthene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Benzo(GHI)Perylene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Bis-(2-chloroethyl)-Ether	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Bis-(2-Chloroethoxy) Methane	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Bis-2-(Chloroisopropyl) Ether	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Bis-2-ethyl hexyl phthalate (Di-2-Ethylhexyl Phthlate)	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
4-Bromophenyl Phenyl Ether	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Butyl benzyl phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
2-Chloronaphthalene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
4-Chlorophenyl phenyl ether	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Chrysene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Dibenzo(a,h) anthracene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Dibutyl phthalate (Di-n-butyl phthalate)	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Di-n-octyl phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

[Δ] *Parameter is not included in VELAP scope of accreditation.*

HRSD
Cleaning wastewater every day for a better Bay.
1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project:	**Hanover County - Totopotomoy WWTP**
Customer Sample ID:	**Field Blank**
Project Code:	**HAN_TO**
Sample Point:	**FB**
Sample Date:	**06/22/11**

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
3,3-Dichlorobenzidine	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Diethyl phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Dimethyl Phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
2,4-Dinitrotoluene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
2,6-Dinitrotoluene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
1,2-Diphenylhydrazine[2,Δ]	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Fluoranthene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Fluorene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Hexachlorobenzene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Hexachlorobutadiene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Hexachlorocyclopentadiene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Hexachloroethane	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Indeno(1,2,3-cd)pyrene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Isophorone	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Naphthalene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Nitrobenzene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
N-Nitrosodi-n-propyl amine	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
N-Nitrosodimethylamine	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
N-Nitrosodiphenylamine[3]	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Phenanthrene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
Pyrene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56
1,2,4 Trichlorobenzene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	18:56

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

[2] *1,2-Diphenylhydrazine gets converted to Azobenzene in the extraction process.*

[3] *N-Nitrosodiphenylamine decomposes in the injection port to Diphenylamine.*

[Δ] *Parameter is not included in VELAP scope of accreditation.*

HRSD
Cleaning wastewater every day for a better Bay.

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project: Hanover County - Totopotomoy WWTP
Customer Sample ID: Field Blank
Project Code: HAN_TO
Sample Point: FB
Sample Date: 06/22/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Pesticides & PCB's							
Aldrin	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:21
Chlordane	EPA 608	ug/L	<0.20	0.20	CCURRY	06/28/11	05:39
alpha-BHC (Hexachlorocyclohexane)	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:21
beta-BHC (Hexachlorocyclohexane)	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:21
DDD	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:21
DDE	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:21
DDT	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:21
Dieldrin	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:21
Alpha-Endosulfan	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:21
Beta-Endosulfan	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:21
Endosulfan sulfate	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:21
Endrin	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:21
Endrin aldehyde	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:21
Heptachlor	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:21
Heptachlor epoxide	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:21
Kepone	EPA 608	ug/L	<0.10	0.10	CCURRY	06/30/11	17:34
Lindane	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:21
Methoxychlor	EPA 8081B	ug/L	<0.05	0.05	CCURRY	06/29/11	22:21
Mirex	EPA 8081B	ug/L	<0.05	0.05	CCURRY	06/29/11	22:21
PCB 1016	EPA 608	ug/L	<1.00	1.00	CCURRY	06/28/11	05:39
PCB 1221	EPA 608	ug/L	<1.00	1.00	CCURRY	06/28/11	05:39
PCB 1232	EPA 608	ug/L	<1.00	1.00	CCURRY	06/28/11	05:39
PCB 1242	EPA 608	ug/L	<1.00	1.00	CCURRY	06/28/11	05:39
PCB 1248	EPA 608	ug/L	<1.00	1.00	CCURRY	06/28/11	05:39
PCB 1254	EPA 608	ug/L	<1.00	1.00	CCURRY	06/28/11	05:39
PCB 1260	EPA 608	ug/L	<1.00	1.00	CCURRY	06/28/11	05:39
PCB Total	EPA 608	ug/L	<7.00	7.00	CCURRY	06/28/11	05:39
Toxaphene	EPA 608	ug/L	<5.00	5.00	CCURRY	06/28/11	05:39
Organophosphorous Pesticides							
Demeton[Δ]	EPA 622	ug/L	<0.10	0.10	CCURRY	06/28/11	15:18
Diazinon	EPA 622	ug/L	<0.10	0.10	CCURRY	06/28/11	15:18
Guthion	EPA 622	ug/L	<0.10	0.10	CCURRY	06/28/11	15:18
Malathion[Δ]	EPA 622	ug/L	<0.10	0.10	CCURRY	06/28/11	15:18
Chlorpyrifos (Dursban)	EPA 622	ug/L	<0.10	0.10	CCURRY	06/28/11	15:18
Parathion[Δ]	EPA 622	ug/L	<0.10	0.10	CCURRY	06/28/11	15:18

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

[Δ] *Parameters are not included in HRSD CEL VELAP scope of accreditation.*

Authorization: Robin Parnell **Date:** 7/18/11
(Lab Manager) / QA Manager

HRSD
Cleaning wastewater every day for a better Bay.

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project: Hanover County - Totopotomoy WWTP
Customer Sample ID: Final Effluent
Project Code: HAN_TO
Sample Point: FNE
Sample Date: 06/22/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Miscellaneous Parameters							
Free Cyanide	ASTM D 4282	ug/L	<10	10	RMORGA	06/23/11	07:15
Ammonia-N	EPA 350.1	mg/L	<0.20	0.20	GBROWN	07/08/11	10:03
Chloride	SM 4500-Cl-B	mg	47	1	JGETTI	06/23/11	09:06
Sulfide (Hydrogen sulfide)	ASTM D 4658-03	mg/L	<0.1	0.1	RMORGA	06/27/11	07:15
Oil and Grease HEM	EPA 1664A	mg/L	<5.0	5.0	RMORGA	06/28/11	07:49
Total Dissolved Solids	SM 2540C	mg/L	348	1	RCASTR	06/22/11	16:40
Total Phenol	EPA 420.4	mg/L	<0.05	0.05	JRICKS	06/30/11	13:53
Hardness (as $CaCO_3$)	SM2340B	mg eq $CaCO_3$/L	72.7	0.20	SLABOC	06/24/11	13:07
Total Metals							
Chromium	EPA 200.8	ug/L	<1.0	1.0	KWILLI	06/28/11	11:47
Selenium	EPA 200.8	ug/L	<0.50	0.50	KWILLI	06/28/11	11:47
Dissolved Metals							
Antimony	EPA 200.8	ug/L	<0.50	0.50	KWILLI	06/28/11	11:28
Arsenic	EPA 200.8	ug/L	<1.0	1.0	KWILLI	06/28/11	11:28
Beryllium	EPA 200.8	ug/L	<0.10	0.10	KWILLI	06/28/11	11:28
Cadmium	EPA 200.8	ug/L	<0.05	0.05	KWILLI	06/28/11	11:28
Chromium III (measured as Total Chromium)		ug/L	<1.0	1.0	KWILLI	06/28/11	11:47
Chromium VI (measured as Total Chromium)		ug/L	<1.0	1.0	KWILLI	06/28/11	11:47
Copper	EPA 200.8	ug/L	1.62	0.50	KWILLI	06/28/11	11:28
Lead	EPA 200.8	ug/L	<0.10	0.10	KWILLI	06/28/11	11:28
Mercury	EPA 245.1	ug/L	<0.10	0.10	SWILLI	06/29/11	09:51
Nickel	EPA 200.8	ug/L	1.25	0.50	KWILLI	06/28/11	11:28
Selenium	EPA 200.8	ug/L	<0.50	0.50	KWILLI	06/28/11	11:28
Silver	EPA 200.8	ug/L	<0.05	0.05	KWILLI	06/28/11	11:28
Thallium	EPA 200.8	ug/L	<0.10	0.10	KWILLI	06/28/11	11:28
Zinc	EPA 200.8	ug/L	36.0	1.0	KWILLI	06/28/11	11:28

Notes:
[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

HRSD
Cleaning wastewater every day for a better Bay.

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project: Hanover County - Totopotomoy WWTP
Customer Sample ID: Final Effluent
Project Code: HAN_TO
Sample Point: FNE
Sample Date: 06/22/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Volatile Organics							
Acrolein	EPA 624	ug/L	<50.0	50.0	SLOPEZ	06/24/11	12:14
Acrylonitrile	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
Benzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
Bromoform	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
Carbon Tetrachloride	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
Chlorobenzene (Monochlorobenzene)	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
Chlorodibromomethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
Chloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
2-Chloro-ethylvinyl Ether	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
Chloroform	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
Dichlorobromomethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
1,2 Dichlorobenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
1,3 Dichlorobenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
1,4 Dichlorobenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
1,1-Dichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
1,2-Dichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
1,1-Dichloroethylene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
1,2-trans-Dichloroethylene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
1,2-Dichloropropane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
1,3 Dichloropropylene (1,3-Dichloropropene)[2]	EPA 624	ug/L	<20.0	20.0	SLOPEZ	06/24/11	05:11
Ethylbenzene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
Methyl Bromide	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
Methyl Chloride	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
Methylene Chloride (Dichloromethane)	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
1,1,2,2-Tetrachloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
Tetrachloroethylene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
Toluene	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
1,1,1-Trichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
1,1,2-Trichloroethane	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
Trichloroethylene (Trichloroethene)	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11
Vinyl Chloride	EPA 624	ug/L	<10.0	10.0	SLOPEZ	06/24/11	05:11

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

[2] *1,3-Dichloropropylene is the total of cis-1,3-Dichloropropylene and trans-1,3-Dichloropropylene.*

HRSD
Cleaning wastewater every day for a better Bay.
1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project: Hanover County - Totopotomoy WWTP
Customer Sample ID: Final Effluent
Project Code: HAN_TO
Sample Point: FNE
Sample Date: 06/22/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Semi-Volatile Organics-Acid Extractables							
p-Chloro-m-cresol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
2-Chlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
2,4 Dichlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
2,4 Dimethylphenol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
4,6-Dinitro-o-cresol (2-Methyl-4,6-dinitrophenol)	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
2,4-Dinitrophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
2-Nitrophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
4-Nitrophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Nonylphenol [Δ]	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Pentachlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Phenol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
2,4,6 Trichlorophenol	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Semi-Volatile Organics - Base Neutral Extractables							
Acenaphthene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Acenapthylene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Anthracene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Benzidine	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Benzo(a)anthracene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Benzo(a)pyrene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Benzo(b)fluoranthene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Benzo(k)fluoranthene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Benzo(GHI)Perylene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Bis-(2-chloroethyl)-Ether	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Bis-(2-Chloroethoxy) Methane	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Bis-2-(Chloroisopropyl) Ether	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Bis-2-ethyl hexyl phthalate (Di-2-Ethylhexyl Phthlate)	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
4-Bromophenyl Phenyl Ether	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Butyl benzyl phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
2-Chloronaphthalene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
4-Chlorophenyl phenyl ether	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Chrysene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Dibenzo(a,h) anthracene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Dibutyl phthalate (Di-n-butyl phthalate)	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Di-n-octyl phthalate	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

[Δ] *Parameter is not included in VELAP scope of accreditation.*

HRSD
Cleaning wastewater every day for a better Bay.
1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project: Hanover County - Totopotomoy WWTP
Customer Sample ID: Final Effluent
Project Code: HAN_TO
Sample Point: FNE
Sample Date: 06/22/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
3,3-Dichlorobenzidine	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Diethyl phthalate*	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Dimethyl Phthalate*	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
2,4-Dinitrotoluene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
2,6-Dinitrotoluene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
1,2-Diphenylhydrazine[2,Δ]	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Fluoranthene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Fluorene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Hexachlorobenzene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Hexachlorobutadiene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Hexachlorocyclopentadiene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Hexachloroethane	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Indeno(1,2,3-cd)pyrene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Isophorone	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Naphthalene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Nitrobenzene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
N-Nitrosodi-n-propyl amine	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
N-Nitrosodimethylamine	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
N-Nitrosodiphenylamine[3]	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Phenanthrene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
Pyrene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29
1,2,4 Trichlorobenzene	EPA 625	ug/L	<10.0	10.0	IGERAS	06/30/11	19:29

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

[2] *1,2-Diphenylhydrazine gets converted to Azobenzene in the extraction process.*

[3] *N-Nitrosodiphenylamine decomposes in the injection port to Diphenylamine.*

[Δ] *Parameter is not included in VELAP scope of accreditation.*

** The % recovery (69% and 66% respectively) of these analytes in the sampe matrix spike duplicate were below the acceptable limit (76-118% and 68-114% respectively) due to possible matrix effect. The % recovery of these analytes were within acceptable limits in the sample matrix spike and laboratory control sample which satisfied the method requirement.*

NELAP ACCREDITED LABORATORY ENI

HRSD
Cleaning wastewater every day for a better Bay.

1432 Air Rail Avenue, Virginia Beach, VA 23455-3002 • 757.460.4205 • Fax: 757.460.6586 • www.hrsd.com

CENTRAL ENVIRONMENTAL LABORATORY
ANALYTICAL REPORT

Project: Hanover County - Totopotomoy WWTP
Customer Sample ID: Final Effluent
Project Code: HAN_TO
Sample Point: FNE
Sample Date: 06/22/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
Pesticides & PCB's							
Aldrin	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:47
Chlordane	EPA 608	ug/L	<0.20	0.20	CCURRY	06/28/11	06:05
alpha-BHC (Hexachlorocyclohexane)	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:47
beta-BHC (Hexachlorocyclohexane)	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:47
DDD	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:47
DDE	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:47
DDT	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:47
Dieldrin	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:47
Alpha-Endosulfan	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:47
Beta-Endosulfan	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:47
Endosulfan sulfate	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:47
Endrin	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:47
Endrin aldehyde	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:47
Heptachlor	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:47
Heptachlor epoxide	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:47
Kepone	EPA 608	ug/L	<0.10	0.10	CCURRY	06/30/11	17:50
Lindane	EPA 608	ug/L	<0.05	0.05	CCURRY	06/29/11	22:47
Methoxychlor	EPA 8081B	ug/L	<0.05	0.05	CCURRY	06/29/11	22:47
Mirex	EPA 8081B	ug/L	<0.05	0.05	CCURRY	06/29/11	22:47
PCB 1016	EPA 608	ug/L	<1.00	1.00	CCURRY	06/28/11	06:05
PCB 1221	EPA 608	ug/L	<1.00	1.00	CCURRY	06/28/11	06:05
PCB 1232	EPA 608	ug/L	<1.00	1.00	CCURRY	06/28/11	06:05
PCB 1242	EPA 608	ug/L	<1.00	1.00	CCURRY	06/28/11	06:05
PCB 1248	EPA 608	ug/L	<1.00	1.00	CCURRY	06/28/11	06:05
PCB 1254	EPA 608	ug/L	<1.00	1.00	CCURRY	06/28/11	06:05
PCB 1260	EPA 608	ug/L	<1.00	1.00	CCURRY	06/28/11	06:05
PCB Total	EPA 608	ug/L	<7.00	7.00	CCURRY	06/28/11	06:05
Toxaphene	EPA 608	ug/L	<5.00	5.00	CCURRY	06/28/11	06:05
Organophosphorous Pesticides							
Demeton[Δ]	EPA 622	ug/L	<0.10	0.10	CCURRY	06/28/11	15:36
Diazinon	EPA 622	ug/L	<0.10	0.10	CCURRY	06/28/11	15:36
Guthion	EPA 622	ug/L	<0.10	0.10	CCURRY	06/28/11	15:36
Malathion[Δ]	EPA 622	ug/L	<0.10	0.10	CCURRY	06/28/11	15:36
Chlorpyrifos (Dursban)	EPA 622	ug/L	<0.10	0.10	CCURRY	06/28/11	15:36
Parathion[Δ]	EPA 622	ug/L	<0.10	0.10	CCURRY	06/28/11	15:36

Notes:

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

[Δ] *Parameters are not included in HRSD CEL VELAP scope of accreditation.*

Authorization: Robin Parnell **Date:** 7/18/11
Lab Manager / **QA Manager**

CENTRAL ENVIRONMENTAL LABORATORY
QUALITY ASSURANCE REPORT
Level 1

Project: Hanover County - Totopotomoy WWTP
Project Code: HAN_TO
Sample Point: FB; FNE
Sample Date: 06/22/11

Analytical Run Information	Sb	As	Be	Cd	Cr	Cu	Pb	Hg	Ni	Se	Ag	Tl	Zn
Method	200.8	200.8	200.8	200.8	200.8	200.8	200.8	245.1	200.8	200.8	200.8	200.8	200.8
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Limit of Detection (LOD)	0.07	0.03	0.02	0.009	0.09	0.09	0.03	0.03	0.04	0.04	0.008	0.03	0.13
Limit of Quantitation (LOQ)	0.5	1.0	0.1	0.05	1.0	0.5	0.1	0.10	0.5	0.5	0.05	0.1	1.0
Method Blank (MB)	<0.07	*0.05	<0.02	<0.009	*0.10	<0.09	*0.09	<0.03	<0.04	<0.04	*0.011	<0.03	<0.13
Total Metals					Cr								
Sample ID: HAN_TO FNE													
Matrix Spike Conc.					5.0								
MS Percent Recovery					102%								
MSD Percent Recovery					100%								
MS/MSD RPD					2								
Dissolved Metals	**Sb**	**As**	**Be**	**Cd**		**Cu**	**Pb**	**Hg**	**Ni**	**Se**	**Ag**	**Tl**	**Zn**
Sample ID: HAN_TO FNE													
Matrix Spike Conc.	2.0	5.0	0.5	0.5		10.0	5.0	1.0	5.0	5.0	0.5	1.0	20.0
MS Percent Recovery	103%	99%	96%	92%		91%	104%	103%	91%	100%	95%	105%	89%
MSD Percent Recovery	101%	101%	91%	91%		93%	100%	103%	91%	105%	90%	102%	96%
MS/MSD RPD	2	3	5	2		2	4	<1	<1	5	5	2	3

MS - Matrix Spike
MSD - Matrix Spike Duplicate
RPD - Relative Percent Difference
*Report Limit is lowest concentration at which quantitation is demonstrated. Values below Report Limit should not be used for compliance determinations due to a high degree of uncertainty.

Validated By: Cynthia Bouto

Date: 07/18/11

HRSD
Cleaning wastewater every day for a better Bay.

CENTRAL ENVIRONMENTAL LABORATORY
1432 AIR RAIL AVENUE
VIRGINIA BEACH, VA 23455
TEL: 757-460-4214
FAX: 757-460-6586

CHAIN OF CUSTODY

PROJECT NAME/CODE: Hanover County_Totopotomoy

ANALYSES REQUESTED, CGN & NUMBER OF CONTAINERS

Project in Lims? Yes ____ No X

CUSTOMER SAMPLE ID	HRSD Use Only: PROJECT CODE	HRSD Use Only: SAMPLE POINT	DATE	TIME	SAMPLED BY	Circle One: MATRIX	Circle One: SAMPLE TYPE	TOTAL METALS (6)	Dissolved Metals (6&)	Hydrogen Sulfide (18)	Total Dissolved Solids (1)	Ammonia (7)	Chloride (12)	VOA (10...10 C)	VOA (10...10 G)	SemiVol Organics (9...9 C)	SemiVol Organics (9...9 N)	HRSD Use Only: Presv'd Checked	HRSD Use Only: CONT. COUNT
	HAN_TO	FB	6/22/2011	1133	JR	L	C	1	1							4		✓	9
	HAN_TO	FB	6/22/2011	1030	JR	L	G							4				✓	4
	HAN_TO	FNE	6/22/2011	1133	JR	L	C	1	1	1	1	1	1				15	✓	21
	HAN_TO	FNE	6/22/2011	1040	JR	L	G								8			✓	8

COMMENTS: * No interferences found - JR

For Ground Water Use Only
Temp. Blank 1 ____ °C
Temp. Blank 2 ____ °C

Relinquished by / Signature	Date/Time 6/22/11 @ 1552	
Received by / Signature	Date/Time 6/22/11 1552	
Relinquished by / Signature	Date/Time	
Received by / Signature	Date/Time	
Relinquished by / Signature	Date/Time	
Received by / Signature	Date/Time	
Relinquished by / Signature	Date/Time	
Received by / Signature	Date/Time	

Temp. Requirement

Where required, submitted samples were transported in coolers maintained at ≤ 6 °C.

Yes ✓ No ____

Int JR

***Preservatives**

- *Hg, Metals (pH<2 - HNO3) (Clean metals check in section)
- *O&G (pH<2 - HCl, check in section) & store ≤ 6 °C
- CN^- (pH>12 - NaOH) & store ≤ 6 °C
- *Sulfide (pH>9 - NaOH+ZnAc) & store ≤ 6 °C
- *Micro ($Na_2S_2O_3$ + EDTA) & store < 10 °C
- *COD, NUT, Phenols (pH<2 - H_2SO_4) & store ≤ 6 °C
- *TOC (pH<2 - H_3PO_4) & store ≤ 6 °C
- *BOD, TSS, TVSS, Turbidity, Surfactant, Sulfate store ≤ 6 °C
- *NUT Non Acidified, Conductivity, Organics store ≤ 6 °C
- *Cr (VI) (pH 9.3 - 9.7 - $(NH_4)_2SO_4$) & store ≤ 6 °C

All sample(s) met proper *preservation requirements. Yes ✓ No ____ Int JR

Sample Type: C=Composite, G=Grab Matrix: L= Liquid , S = Solid CGN: Container Group Number

NOTE: ALL APPLICABLE INFORMATION MUST BE COMPLETED PRIOR TO ACCEPTANCE.

HRSD
Cleaning wastewater every day for a better Bay.

CENTRAL ENVIRONMENTAL LABORATORY
1432 AIR RAIL AVENUE
VIRGINIA BEACH, VA 23455
TEL: 757-460-4214
FAX: 757-460-6586

CHAIN OF CUSTODY

PROJECT NAME/CODE: Hanover County_Totopotomoy

CUSTOMER SAMPLE ID	HRSD Use Only: PROJECT CODE	HRSD Use Only: SAMPLE POINT	DATE	TIME	SAMPLED BY	Circle One: MATRIX	Circle One: SAMPLE TYPE	ANALYSES REQUESTED, CGN & NUMBER OF CONTAINERS: Free Cyanide (64)	Oil & Grease (8...8C)	Total Phenol (3)					Project in Lims? Yes / No: X	HRSD Use Only: Presv'd Checked	CONT. COUNT
	HAN_TO	FNE	6/22/2011	1040	JR	L	G	1	4	1						✓	6

COMMENTS: * NO interferences found - JR

For Ground Water Use Only
Temp. Blank 1 ____ °C
Temp. Blank 2 ____ °C

Relinquished by / Signature	Date/Time 6/22/11 @ 1552	Temp. Requirement: Where required, submitted samples were transported in coolers maintained at ≤ 6 °C. Yes ✓ No ____ Int JR
Received by / Signature	Date/Time 6/22/11 1552	
Relinquished by / Signature	Date/Time	
Received by / Signature	Date/Time	
Relinquished by / Signature	Date/Time	
Received by / Signature	Date/Time	
Relinquished by / Signature	Date/Time	
Received by / Signature	Date/Time	

All sample(s) met proper *preservation requirements. Yes ✓ No ____ Int JR

*Preservatives
- *Hg, Metals (pH<2 - HNO3) (Clean metals check in section)
- *O&G (pH<2 - HCl, check in section) & store ≤ 6 °C
- CN^- (pH>12 - NaOH) & store ≤ 6 °C
- *Sulfide (pH>9 - NaOH+ZnAc) & store ≤ 6 °C
- *Micro ($Na_2S_2O_3$ + EDTA) & store < 10 °C
- *COD, NUT, Phenols (pH<2 - H_2SO_4) & store ≤ 6 °C
- *TOC (pH<2 - H_3PO_4) & store ≤ 6 °C
- *BOD, TSS, TVSS, Turbidity, Surfactant, Sulfate store ≤ 6 °C
- *NUT Non Acidified, Conductivity, Organics store ≤ 6 °C
- *Cr (VI) (pH 9.3 - 9.7 - $(NH_4)_2SO_4$) & store ≤ 6 °C

Sample Type: C=Composite, G=Grab Matrix: L= Liquid , S = Solid CGN: Container Group Number

NOTE: ALL APPLICABLE INFORMATION MUST BE COMPLETED PRIOR TO ACCEPTANCE.

HRSD
Cleaning wastewater every day for a better Bay.

CENTRAL ENVIRONMENTAL LABORATORY
1432 AIR RAIL AVENUE
VIRGINIA BEACH, VA 23455
TEL: 757-460-4214
FAX: 757-460-6586

CHAIN OF CUSTODY

PROJECT NAME/CODE: Hanover County_Totopotomoy

ANALYSES REQUESTED, CGN & NUMBER OF CONTAINERS

Project in Lims? Yes ____ No X

CUSTOMER SAMPLE ID	HRSD Use Only: PROJECT CODE	HRSD Use Only: SAMPLE POINT	DATE	TIME	SAMPLED BY	Circle One: MATRIX	Circle One: SAMPLE TYPE	TBT (31) - - - B							HRSD Use Only: Presv'd Checked	HRSD Use Only: CONT. COUNT
	HAN_TO	FNE	6/22/2011	1133	JR	L	G	3							✓	3

COMMENTS: * 31B is 2/3 full - JR

For Ground Water Use Only
Temp. Blank 1 = ____ °C
Temp. Blank 2 = ____ °C

Relinquished by / Signature	Jennifer Keirn	Date/Time 6/22/11 @ 1552
Received by / Signature	[signature]	Date/Time 6/22/11 1552
Relinquished by / Signature		Date/Time
Received by / Signature		Date/Time
Relinquished by / Signature		Date/Time
Received by / Signature		Date/Time
Relinquished by / Signature		Date/Time
Received by / Signature		Date/Time

Temp. Requirement

Where required, submitted samples were transported in coolers maintained at ≤ 6 °C.

Yes ✓ No ____

Int JR

***Preservatives**

- *Hg, Metals (pH<2 - HNO3) (Clean metals check in section)
- *O&G (pH<2 - HCl, check in section) & store ≤ 6 °C
- CN^- (pH>12 - NaOH) & store ≤ 6 °C
- *Sulfide (pH>9 - NaOH+ZnAc) & store ≤ 6 °C
- *Micro ($Na_2S_2O_3$ + EDTA) & store < 10 °C
- *COD, NUT, Phenols (pH<2 - H_2SO_4) & store ≤ 6 °C
- *TOC (pH<2 - H_3PO_4) & store ≤ 6 °C
- *BOD, TSS, TVSS, Turbidity, Surfactant, Sulfate store ≤ 6 °C
- *NUT Non Acidified, Conductivity, Organics store ≤ 6 °C
- *Cr (VI) (pH 9.3 - 9.7 - $(NH_4)_2SO_4$) & store ≤ 6 °C

All sample(s) met proper *preservation requirements. Yes ✓ No ____ Int CH

Sample Type: C=Composite, G=Grab Matrix: L= Liquid , S = Solid CGN: Container Group Number

NOTE: ALL APPLICABLE INFORMATION MUST BE COMPLETED PRIOR TO ACCEPTANCE.

SUBCONTRACTED DATA

Virginia Institute of Marine Science
Department of Environmental and Aquatic Animal Health
Route 1208 Greate Road
Gloucester Point VA 23062
804-684-7654

ANALYTICAL REPORT

Project Code: HAN_TO
Sample Point: FNE
Sample Date: 06/22/11

Analyte	Method	Unit	Result	Report Limit[1]	Analyst	Analysis Date	Analysis Time
TBT	Unger	ng/L	<30	30	ET	06/27/11	9:20

VIMS is a non VELAP certified lab.

Notes

[1] *Report Limit is lowest concentration at which quantitation is demonstrated.*

Authorization: Ellen Travelstead Ellen Travelstead **Date:** 06/27/2011